



SUBSTITUTE SEQUENCE LISTING

<110> Chiaur, D.  
Pagano, M.  
Latres, E.

<120> METHODS TO IDENTIFY COMPOUNDS USEFUL FOR THE TREATMENT  
OF PROLIFERATIVE AND DIFFERENTIATIVE DISORDERS

<130> 5914-099-999

<140> US/10/652,928

<141> 2003-08-28

<150> US/09/385,219A

<151> 1999-08-27

<150> 60/098,355

<151> 1998-08-28

<150> 60/118,568

<151> 1999-02-03

<150> 60/124,449

<151> 1999-03-15

<160> 100

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 2151

<212> DNA

<213> Homo sapiens

<220>

<223> Nucleotide sequence of human F-box protein FBP1/Beta-TRCP1

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cctatgttgc	agagagattt	cataactgct	ctgccagctc	ggggattgga	tcatatcgct	540
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<210> 2

<211> 569

<212> PRT

<213> Homo sapiens

<220>

<223> Amino Acid sequence of human F-box protein FBP1/Beta-TRCP1

<400> 2

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          35          40          45
Arg Leu Cys Leu Asn Gln Glu Thr Val Cys Leu Ala Ser Thr Ala Met
          50          55          60
Lys Thr Glu Asn Cys Val Ala Lys Thr Lys Leu Ala Asn Gly Thr Ser
          65          70          75          80
Ser Met Ile Val Pro Lys Gln Arg Lys Leu Ser Ala Ser Tyr Glu Lys
          85          90          95
Glu Lys Glu Leu Cys Val Lys Tyr Phe Glu Gln Trp Ser Glu Ser Asp
          100          105          110
Gln Val Glu Phe Val Glu His Leu Ile Ser Gln Met Cys His Tyr Gln
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His Gly His Ile Asn Ser Tyr Leu Lys Pro Met Leu Gln Arg Asp Phe
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Ile Thr Ala Leu Pro Ala Arg Gly Leu Asp His Ile Ala Glu Asn Ile
          145          150          155          160
Leu Ser Tyr Leu Asp Ala Lys Ser Leu Cys Ala Ala Glu Leu Val Cys
          165          170          175
Lys Glu Trp Tyr Arg Val Thr Ser Asp Gly Met Leu Trp Lys Lys Leu
          180          185          190
Ile Glu Arg Met Val Arg Thr Asp Ser Leu Trp Arg Gly Leu Ala Glu
          195          200          205
Arg Arg Gly Trp Gly Gln Tyr Leu Phe Lys Asn Lys Pro Pro Asp Gly
          210          215          220
Asn Ala Pro Pro Asn Ser Phe Tyr Arg Ala Leu Tyr Pro Lys Ile Ile
          225          230          235          240
Gln Asp Ile Glu Thr Ile Glu Ser Asn Trp Arg Cys Gly Arg His Ser
          245          250          255
Leu Gln Arg Ile His Cys Arg Ser Glu Thr Ser Lys Gly Val Tyr Cys
          260          265          270
Leu Gln Tyr Asp Asp Gln Lys Ile Val Ser Gly Leu Arg Asp Asn Thr
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Ile	Thr	Gly	Ser	Ser	Asp	Ser	Thr	Val	Arg	Val	Trp	Asp	Val	Asn	Thr
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Gly	Glu	Met	Leu	Asn	Thr	Leu	Ile	His	His	Cys	Glu	Ala	Val	Leu	His
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Leu	Arg	Phe	Asn	Asn	Gly	Met	Met	Val	Thr	Cys	Ser	Lys	Asp	Arg	Ser
		355				360						365			
Ile	Ala	Val	Trp	Asp	Met	Ala	Ser	Pro	Thr	Asp	Ile	Thr	Leu	Arg	Arg
	370					375					380				
Val	Leu	Val	Gly	His	Arg	Ala	Ala	Val	Asn	Val	Val	Asp	Phe	Asp	Asp
385					390					395					400
Lys	Tyr	Ile	Val	Ser	Ala	Ser	Gly	Asp	Arg	Thr	Ile	Lys	Val	Trp	Asn
				405					410					415	
Thr	Ser	Thr	Cys	Glu	Phe	Val	Arg	Thr	Leu	Asn	Gly	His	Lys	Arg	Gly
			420					425					430		
Ile	Ala	Cys	Leu	Gln	Tyr	Arg	Asp	Arg	Leu	Val	Val	Ser	Gly	Ser	Ser
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	450					455					460				
Val	Leu	Glu	Gly	His	Glu	Glu	Leu	Val	Arg	Cys	Ile	Arg	Phe	Asp	Asn
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Lys	Arg	Ile	Val	Ser	Gly	Ala	Tyr	Asp	Gly	Lys	Ile	Lys	Val	Trp	Asp
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	515						520					525			
Glu	Phe	Gln	Ile	Val	Ser	Ser	Ser	His	Asp	Asp	Thr	Ile	Leu	Ile	Trp
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Asp	Phe	Leu	Asn	Asp	Pro	Ala	Ala	Gln	Ala	Glu	Pro	Pro	Arg	Ser	Pro
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<210> 3

<211> 1476

<212> DNA

<213> Homo sapiens

<220>

<223> Nucleotide sequence of human F-box protein FBP2

<400> 3

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cccctggagc tcagttttta tttgttaaaa tggctcgatc ctcagacttt actcacatgc 240
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gcatgtaaaa atttgggctg gcagatagat gattctgttc aggacgcttt gcaactggaag 360
aaggtttatt tgaaggctat tttgagaatg aagcaactgg aggaccatga agcctttgaa 420
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<210> 4  
 <211> 422  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Amino Acid sequence of human F-box protein FBP2

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Ile Ser Leu Ser Gly Ala Val Gln Leu Arg His Leu Ser Asn Asn Leu
 35          40          45
Glu Thr Leu Leu Lys Arg Asp Phe Leu Lys Leu Leu Pro Leu Glu Leu
 50          55          60
Ser Phe Tyr Leu Leu Lys Trp Leu Asp Pro Gln Thr Leu Leu Thr Cys
 65          70          75          80
Cys Leu Val Ser Lys Gln Trp Asn Lys Val Ile Ser Ala Cys Thr Glu
 85          90          95
Val Trp Gln Thr Ala Cys Lys Asn Leu Gly Trp Gln Ile Asp Asp Ser
100          105          110
Val Gln Asp Ala Leu His Trp Lys Lys Val Tyr Leu Lys Ala Ile Leu
115          120          125
Arg Met Lys Gln Leu Glu Asp His Glu Ala Phe Glu Thr Ser Ser Leu
130          135          140
Ile Gly His Ser Ala Arg Val Tyr Ala Leu Tyr Tyr Lys Asp Gly Leu
145          150          155          160
Leu Cys Thr Gly Ser Asp Asp Leu Ser Ala Lys Leu Trp Asp Val Ser
165          170          175
Thr Gly Gln Cys Val Tyr Gly Ile Gln Thr His Thr Cys Ala Ala Val
180          185          190
Lys Phe Asp Glu Gln Lys Leu Val Thr Gly Ser Phe Asp Asn Thr Val
195          200          205
Ala Cys Trp Glu Trp Ser Ser Gly Ala Arg Thr Gln His Phe Arg Gly
210          215          220
His Thr Gly Ala Val Phe Ser Val Asp Tyr Asn Asp Glu Leu Asp Ile
225          230          235          240
Leu Val Ser Gly Ser Ala Asp Phe Thr Val Lys Val Trp Ala Leu Ser
245          250          255
Ala Gly Thr Cys Leu Asn Thr Leu Thr Gly His Thr Glu Trp Val Thr
260          265          270
Lys Val Val Leu Gln Lys Cys Lys Val Lys Ser Leu Leu His Ser Pro
275          280          285
Gly Asp Tyr Ile Leu Leu Ser Ala Asp Lys Tyr Glu Ile Lys Ile Trp
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Pro Ile Gly Arg Glu Ile Asn Cys Lys Cys Leu Lys Thr Leu Ser Val
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Leu	Ala	Leu	Leu	Gly	Phe	Gly	Asp	Ile	Phe	Ala	Leu	Leu	Phe	Asp	Asn				
	370					375					380								
Arg	Tyr	Leu	Tyr	Ile	Met	Asp	Leu	Arg	Thr	Glu	Ser	Leu	Ile	Ser	Arg				
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<210> 5

<211> 1407

<212> DNA

<213> Homo sapiens

<220>

<223> Nucleotide sequence of human F-box protein FBP3a

<400> 5

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<210> 6

<211> 428

<212> PRT

<213> Homo sapeins

<220>

<223> Amino acid sequence of human F-box protein FBP3a

<400> 6

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Thr	Cys	Asp	Trp	Gly	Asn	Leu	Leu	Gln	Asp	Ile	Ile	Leu	Gln	Val	Phe		
		35					40					45					
Lys	Tyr	Leu	Pro	Leu	Leu	Asp	Arg	Ala	His	Ala	Ser	Gln	Val	Cys	Arg		
	50					55					60						
Asn	Trp	Asn	Gln	Val	Phe	His	Met	Pro	Asp	Leu	Trp	Arg	Cys	Phe	Glu		
65					70					75					80		
Phe	Glu	Leu	Asn	Gln	Pro	Ala	Thr	Ser	Tyr	Leu	Lys	Ala	Thr	His	Pro		
				85					90					95			
Glu	Leu	Ile	Lys	Gln	Ile	Ile	Lys	Arg	His	Ser	Asn	His	Leu	Gln	Tyr		
			100					105					110				
Val	Ser	Phe	Lys	Val	Asp	Ser	Ser	Lys	Glu	Ser	Ala	Glu	Ala	Ala	Cys		
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Asp	Ile	Leu	Ser	Gln	Leu	Val	Asn	Cys	Ser	Leu	Lys	Thr	Leu	Gly	Leu		
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Ile	Ser	Thr	Ala	Arg	Pro	Ser	Phe	Met	Asp	Leu	Pro	Lys	Ser	His	Phe		
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		195					200					205					
Pro	His	Val	Ser	Pro	Ala	Gly	Ile	Leu	Cys	Val	Ala	Asp	Gln	Cys	His		
	210					215					220						
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225					230					235					240		
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				245					250					255			
Ile	Asp	Val	Val	Ser	Glu	Asn	Pro	Gly	Gln	Thr	His	Phe	His	Thr	Ile		
			260					265					270				
Gln	Lys	Ser	Ser	Trp	Asp	Ala	Phe	Ile	Arg	His	Ser	Pro	Lys	Val	Asn		
		275					280					285					
Leu	Val	Met	Tyr	Phe	Phe	Leu	Tyr	Glu	Glu	Glu	Phe	Asp	Pro	Phe	Phe		
		290				295					300						
Arg	Tyr	Glu	Ile	Pro	Ala	Thr	His	Leu	Tyr	Phe	Gly	Arg	Ser	Val	Ser		
305					310					315					320		
Lys	Asp	Val	Leu	Gly	Arg	Val	Gly	Met	Thr	Cys	Pro	Arg	Leu	Val	Glu		
				325					330					335			
Leu	Val	Val	Cys	Ala	Asn	Gly	Leu	Arg	Pro	Leu	Asp	Glu	Glu	Leu	Ile		
			340					345					350				
Arg	Ile	Ala	Glu	Arg	Cys	Lys	Asn	Leu	Ser	Ala	Ile	Gly	Leu	Gly	Glu		
		355					360					365					
Cys	Glu	Val	Ser	Cys	Ser	Ala	Phe	Val	Glu	Phe	Val	Lys	Met	Cys	Gly		
	370					375					380						
Gly	Arg	Leu	Ser	Gln	Leu	Ser	Ile	Met	Glu	Glu	Val	Leu	Ile	Pro	Asp		
385					390					395				400			
Gln	Lys	Tyr	Ser	Leu	Glu	Gln	Ile	His	Trp	Glu	Val	Ser	Lys	His	Leu		
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<210> 7

<211> 1444

<212> DNA

<213> Homo sapiens

<220>

<223> Nucleotide sequence of human F-box protein FBP4

<400> 7

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tgtttttatt tggctcatga gctgcatctg aatcttctaa atcacccatg gctggtccag 1080
gatacagagg ctgaaactct gactggtttt ttgaatggca ttgagtggat tcttgaagaa 1140
gtggaatcta agcgtgcaag atgattctct ttccagatct tgggaactga aaccatttga 1200
aatttattac taaggtcgtg atgtgaatat ttgctcagtc agcccacctt gtcctgcctt 1260
tttgagata ggctttcatt tggacagcta taactgctgt gttttttata ttatttttac 1320
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<210> 8

<211> 472

<212> PRT

<213> Homo sapiens

<220>

<223> Amino acid sequence of human F-box protein FBP4

<400> 8

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Thr Phe Trp Gln Ser Val Ser Lys Asp Arg Val Ala Arg Thr Thr Ser
 35          40          45
Arg Glu Glu Val Asp Glu Ala Ser Thr Leu Thr Arg Leu Pro Ile
 50          55          60
Asp Val Gln Leu Tyr Ile Leu Ser Phe Leu Ser Pro His Asp Leu Cys
 65          70          75          80
Gln Leu Gly Ser Thr Asn His Tyr Trp Asn Glu Thr Val Arg Asn Pro
 85          90          95
Ile Leu Trp Arg Tyr Phe Leu Leu Arg Asp Leu Pro Ser Trp Ser Ser
100          105          110
Val Asp Trp Lys Ser Leu Pro Tyr Leu Gln Ile Leu Lys Lys Pro Ile
115          120          125
Ser Glu Val Ser Asp Gly Ala Phe Phe Asp Tyr Met Ala Val Tyr Leu
130          135          140
Met Cys Cys Pro Tyr Thr Arg Arg Ala Ser Lys Ser Ser Arg Pro Met
145          150          155          160
Tyr Gly Ala Val Thr Ser Phe Leu His Ser Leu Ile Ile Pro Asn Glu
165          170          175
Pro Arg Phe Ala Leu Phe Gly Pro Arg Leu Glu Gln Leu Asn Thr Ser
180          185          190
Leu Val Leu Ser Leu Leu Ser Ser Glu Glu Leu Cys Pro Thr Ala Gly
195          200          205

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Leu Pro Gln Arg Gln Ile Asp Gly Ile Gly Ser Gly Val Asn Phe Gln  
 210 215 220  
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 225 230 235 240  
 Arg Lys Glu Arg Asp Arg Ala Arg Glu Glu His Thr Ser Ala Val Asn  
 245 250 255  
 Lys Met Phe Ser Arg His Asn Glu Gly Asp Asp Arg Pro Gly Ser Arg  
 260 265 270  
 Tyr Ser Val Ile Pro Gln Ile Gln Lys Leu Cys Glu Val Val Asp Gly  
 275 280 285  
 Phe Ile Tyr Val Ala Asn Ala Glu Ala His Lys Arg His Glu Trp Gln  
 290 295 300  
 Asp Glu Phe Ser His Ile Met Ala Met Thr Asp Pro Ala Phe Gly Ser  
 305 310 315 320  
 Ser Gly Arg Pro Leu Leu Val Leu Ser Cys Ile Ser Gln Gly Asp Val  
 325 330 335  
 Lys Arg Met Pro Cys Phe Tyr Leu Ala His Glu Leu His Leu Asn Leu  
 340 345 350  
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 Gly Phe Leu Asn Gly Ile Glu Trp Ile Leu Glu Glu Val Glu Ser Lys  
 370 375 380  
 Arg Ala Arg Phe Ser Phe Gln Ile Leu Gly Thr Glu Thr Ile Asn Leu  
 385 390 395 400  
 Leu Leu Arg Ser Cys Glu Tyr Leu Leu Ser Gln Pro Thr Leu Ser Cys  
 405 410 415  
 Leu Phe Ala Asp Arg Leu Ser Phe Gly Gln Leu Leu Leu Cys Phe Leu  
 420 425 430  
 Tyr Tyr Phe Tyr Phe Leu Pro Ile Asn Tyr Lys Lys Arg Val Ser Val  
 435 440 445  
 Leu Val Phe Ser Pro Lys Met Asn Leu Thr Phe Phe Trp Phe Leu Tyr  
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 Phe Leu Ser Phe Lys Tyr Ile Leu  
 465 470

<210> 9  
 <211> 2076  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> Nucleotide sequence of human F-box protein FBP5/EMI1

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 ccccagcgca gtgacagccg ccgggcgccc tcgaccctcg gatagttgta aagaagaaag 180  
 ttctaccctt tctgtcaaaa tgaagtgtga ttttaattgt aaccatgttc attccggact 240  
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 ggtttggtca acattaaaaa agaatgcaaa acgaaatcct aaagtagatc gggagatgct 720  
 gaaggaaatt atagccagag gaaatttttag actgcagaat ataattggca gaaaaattggg 780  
 cctagaatgt gtagatattc tcagcgaact ctttcgaagg ggactcagac atgtcttagc 840  
 aactatttta gcacaactca gtgacatgga cttaatcaat gtgtctaaag tgagcacaac 900  
 ttggaagaag atcctagaag atgataaggg ggcattccag ttgtacagta aagcaatata 960



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<210> 10

<211> 447

<212> PRT

<213> Homo sapiens

<220>

<223> Amino acid sequence of human F-box protein FBP5/EMI1

<400> 10

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Cys Ser Ala Ser Pro Ser Ala Val Thr Ala Ala Gly Arg Pro Arg Pro
20          25          30
Ser Asp Ser Cys Lys Glu Glu Ser Thr Leu Ser Val Lys Met Lys
35          40          45
Cys Asp Phe Asn Cys Asn His Val His Ser Gly Leu Lys Leu Val Lys
50          55          60
Pro Asp Asp Ile Gly Arg Leu Val Ser Tyr Thr Pro Ala Tyr Leu Glu
65          70          75          80
Gly Ser Cys Lys Asp Cys Ile Lys Asp Tyr Glu Arg Leu Ser Cys Ile
85          90          95
Gly Ser Pro Ile Val Ser Pro Arg Ile Val Gln Leu Glu Thr Glu Ser
100         105         110
Lys Arg Leu His Asn Lys Glu Asn Gln His Val Gln Gln Thr Leu Asn
115         120         125
Ser Thr Asn Glu Ile Glu Ala Leu Glu Thr Ser Arg Leu Tyr Glu Asp
130         135         140
Ser Gly Tyr Ser Ser Phe Ser Leu Gln Ser Gly Leu Ser Glu His Glu
145         150         155         160
Glu Gly Ser Leu Leu Glu Glu Asn Phe Gly Asp Ser Leu Gln Ser Cys
165         170         175
Leu Leu Gln Ile Gln Ser Pro Asp Gln Tyr Pro Asn Lys Asn Leu Leu
180         185         190
Pro Val Leu His Phe Glu Lys Val Val Cys Ser Thr Leu Lys Lys Asn
195         200         205
Ala Lys Arg Asn Pro Lys Val Asp Arg Glu Met Leu Lys Glu Ile Ile
210         215         220
Ala Arg Gly Asn Phe Arg Leu Gln Asn Ile Ile Gly Arg Lys Met Gly
225         230         235         240
Leu Glu Cys Val Asp Ile Leu Ser Glu Leu Phe Arg Arg Gly Leu Arg
245         250         255

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His	Val	Leu	Ala	Thr	Ile	Leu	Ala	Gln	Leu	Ser	Asp	Met	Asp	Leu	Ile
			260					265					270		
Asn	Val	Ser	Lys	Val	Ser	Thr	Thr	Trp	Lys	Lys	Ile	Leu	Glu	Asp	Asp
		275					280					285			
Lys	Gly	Ala	Phe	Gln	Leu	Tyr	Ser	Lys	Ala	Ile	Gln	Arg	Val	Thr	Glu
	290				295						300				
Asn	Asn	Asn	Lys	Phe	Ser	Pro	His	Ala	Ser	Thr	Arg	Glu	Tyr	Val	Met
305					310					315					320
Phe	Arg	Thr	Pro	Leu	Ala	Ser	Val	Gln	Lys	Ser	Ala	Ala	Gln	Thr	Ser
			325						330					335	
Leu	Lys	Lys	Asp	Ala	Gln	Thr	Lys	Leu	Ser	Asn	Gln	Gly	Asp	Gln	Lys
			340				345						350		
Gly	Ser	Thr	Tyr	Ser	Arg	His	Asn	Glu	Phe	Ser	Glu	Val	Ala	Lys	Thr
	355					360						365			
Leu	Lys	Lys	Asn	Glu	Ser	Leu	Lys	Ala	Cys	Ile	Arg	Cys	Asn	Ser	Pro
	370				375						380				
Ala	Lys	Tyr	Asp	Cys	Tyr	Leu	Gln	Arg	Ala	Thr	Cys	Lys	Arg	Glu	Gly
385					390					395					400
Cys	Gly	Phe	Asp	Tyr	Cys	Thr	Lys	Cys	Leu	Cys	Asn	Tyr	His	Thr	Thr
			405					410						415	
Lys	Asp	Cys	Ser	Asp	Gly	Lys	Leu	Leu	Lys	Ala	Ser	Cys	Lys	Ile	Gly
			420				425						430		
Pro	Leu	Pro	Gly	Thr	Lys	Lys	Ser	Lys	Lys	Asn	Leu	Arg	Arg	Leu	
	435						440					445			

<210> 11

<211> 1535

<212> DNA

<213> Homo sapiens

<220>

<223> Nucleotide sequence of human F-box protein FBP6

<400> 11

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gggggatccc aggccatgga cgctccccac tccaaagcag ccctggacag cattaacgag 180
ctgcccgata acatcctgct ggagctgttc acgcacgtgc ccgcccgcca gctgctgctg 240
aactgccgcc tggctctgcag cctctggcgg gacctcatcg acctcctgac cctctggaaa 300
cgcaagtgcc tgcgaaaggg cttcatcacc aaggactggg accagcccgt ggccgactgg 360
aaaaatttct acttcctacg gagcctgcac aggaacctcc tgcgcaacct gtgtgctgaa 420
aacgatatgt ttgcatggca aattgatctc aatggtgggg accgctggaa ggtggatagc 480
ctccctggag cccacgggac agaatttcct gaccccaaag tcaagaagtc ttttgtcaca 540
tcctacgaac tgtgcctcaa gtgggagctg gtggaccttc tagccgaccg ctactgggag 600
gagctactag acacattccg gccggacatc gtggttaagg actggtttgc tgccagagcc 660
gactgtggct gcacctacca actcaaagtg cagctggcct cggctgacta cttcgtgttg 720
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tggctcacgc ctgtaatccc agcacttttg gagaccgagg caggtggatc acgaggtcag 1260
gagacagaga ccacctctgg caacacgggtg aaaccctgtc tctactaaaa atacaaaaaa 1320
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gcctgggtga cagagcgaga ctctggctca taaaataata ataataataa ataaataaaa 1500
aataaatggt tttcagtaaa aaaaaaaaaa aaaaaa 1535

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<210> 12  
 <211> 338  
 <212> PRT  
 <213> Homo sapiens

<220>

<223> Amino acid sequence of human F-box protein FBP6

<400> 12

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Val	Leu	Ser	Arg	Pro	Pro	Pro	Gly	Gly	Gly	Asp	Ser	Phe	Arg	Thr	Arg
			20					25					30		
Arg	Pro	Gln	Arg	Gly	Pro	Gly	Pro	Gly	Gly	Ser	Gln	Ala	Met	Asp	Ala
		35					40					45			
Pro	His	Ser	Lys	Ala	Ala	Leu	Asp	Ser	Ile	Asn	Glu	Leu	Pro	Asp	Asn
	50					55					60				
Ile	Leu	Leu	Glu	Leu	Phe	Thr	His	Val	Pro	Ala	Arg	Gln	Leu	Leu	Leu
65					70				75						80
Asn	Cys	Arg	Leu	Val	Cys	Ser	Leu	Trp	Arg	Asp	Leu	Ile	Asp	Leu	Leu
			85						90					95	
Thr	Leu	Trp	Lys	Arg	Lys	Cys	Leu	Arg	Lys	Gly	Phe	Ile	Thr	Lys	Asp
			100					105					110		
Trp	Asp	Gln	Pro	Val	Ala	Asp	Trp	Lys	Ile	Phe	Tyr	Phe	Leu	Arg	Ser
		115					120					125			
Leu	His	Arg	Asn	Leu	Leu	Arg	Asn	Pro	Cys	Ala	Glu	Asn	Asp	Met	Phe
	130					135					140				
Ala	Trp	Gln	Ile	Asp	Phe	Asn	Gly	Gly	Asp	Arg	Trp	Lys	Val	Asp	Ser
145					150				155						160
Leu	Pro	Gly	Ala	His	Gly	Thr	Glu	Phe	Pro	Asp	Pro	Lys	Val	Lys	Lys
			165					170						175	
Ser	Phe	Val	Thr	Ser	Tyr	Glu	Leu	Cys	Leu	Lys	Trp	Glu	Leu	Val	Asp
		180					185					190			
Leu	Leu	Ala	Asp	Arg	Tyr	Trp	Glu	Glu	Leu	Leu	Asp	Thr	Phe	Arg	Pro
	195						200					205			
Asp	Ile	Val	Val	Lys	Asp	Trp	Phe	Ala	Ala	Arg	Ala	Asp	Cys	Gly	Cys
	210				215						220				
Thr	Tyr	Gln	Leu	Lys	Val	Gln	Leu	Ala	Ser	Ala	Asp	Tyr	Phe	Val	Leu
225				230					235						240
Ala	Ser	Phe	Glu	Pro	Pro	Val	Thr	Ile	Gln	Gln	Trp	Asn	Asn	Ala	
			245					250					255		
Thr	Trp	Thr	Glu	Val	Ser	Tyr	Thr	Phe	Ser	Asp	Tyr	Pro	Arg	Gly	Val
		260					265						270		
Arg	Tyr	Ile	Leu	Phe	Gln	His	Gly	Gly	Arg	Asp	Thr	Gln	Tyr	Trp	Ala
	275						280					285			
Gly	Trp	Tyr	Gly	Pro	Arg	Val	Thr	Asn	Ser	Ser	Ile	Val	Val	Ser	Pro
	290					295					300				
Lys	Met	Thr	Arg	Asn	Gln	Ala	Ser	Ser	Glu	Ala	Gln	Pro	Gly	Gln	Lys
305				310					315						320
His	Gly	Gln	Glu	Glu	Ala	Ala	Gln	Ser	Pro	Tyr	Gly	Ala	Val	Val	Gln
			325					330						335	

Ile Phe

<210> 13  
 <211> 1763  
 <212> DNA  
 <213> Homo sapiens

<220>

<223> Nucleotide sequence of human F-box protein FBP7

<400> 13

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atgacgacag tatgttaggg cctagtcaaa attttgaagc tgagtcaatt caagataatg 360
cgcatatggc agagggcaca ggtttctatc cctcagaacc cctgctctgt agtgaatcgg 420
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cagattaaaa aaaagtgtaa att 1763

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<210> 14

<211> 482

<212> PRT

<213> Homo sapiens

<220>

<223> Amino acid sequence of human F-box protein FBP7

<400> 14

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Thr Gly Asp Glu Glu Thr Leu Ala Ser Tyr Gly Ile Val Ser Gly Asp
          20           25           30
Leu Ile Cys Leu Ile Leu His Asp Asp Ile Pro Pro Pro Asn Ile Pro
          35           40           45
Ser Ser Thr Asp Ser Glu His Ser Ser Leu Gln Asn Asn Glu Gln Pro
          50           55           60
Ser Leu Ala Thr Ser Ser Asn Gln Thr Ser Ile Gln Asp Glu Gln Pro
          65           70           75           80
Ser Asp Ser Phe Gln Gly Gln Ala Ala Gln Ser Gly Val Trp Asn Asp
          85           90           95
Asp Ser Met Leu Gly Pro Ser Gln Asn Phe Glu Ala Glu Ser Ile Gln
          100          105          110
Asp Asn Ala His Met Ala Glu Gly Thr Gly Phe Tyr Pro Ser Glu Pro
          115          120          125
Leu Leu Cys Ser Glu Ser Val Glu Gly Gln Val Pro His Ser Leu Glu
          130          135          140

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Thr Leu Tyr Gln Ser Ala Asp Cys Ser Asp Ala Asn Asp Ala Leu Ile  
 145 150 155 160  
 Val Leu Ile His Leu Leu Met Leu Glu Ser Gly Tyr Ile Pro Gln Gly  
 165 170 175  
 Thr Glu Ala Lys Ala Leu Ser Leu Pro Glu Lys Trp Lys Leu Ser Gly  
 180 185 190  
 Val Tyr Lys Leu Gln Tyr Met His Leu Cys Glu Gly Ser Ser Ala  
 195 200 205  
 Thr Leu Thr Cys Val Pro Leu Gly Asn Leu Ile Val Val Asn Ala Thr  
 210 215 220  
 Leu Lys Ile Asn Asn Glu Ile Arg Ser Val Lys Arg Leu Gln Leu Leu  
 225 230 235 240  
 Pro Glu Ser Phe Ile Cys Lys Glu Lys Leu Gly Glu Asn Val Ala Asn  
 245 250 255  
 Ile Tyr Lys Asp Leu Gln Lys Leu Ser Arg Leu Phe Lys Asp Gln Leu  
 260 265 270  
 Val Tyr Pro Leu Leu Ala Phe Thr Arg Gln Ala Leu Asn Leu Pro Asn  
 275 280 285  
 Val Phe Gly Leu Val Val Leu Pro Leu Glu Leu Lys Leu Arg Ile Phe  
 290 295 300  
 Arg Leu Leu Asp Val Arg Ser Val Leu Ser Leu Ser Ala Val Cys Arg  
 305 310 315 320  
 Asp Leu Phe Thr Ala Ser Asn Asp Pro Leu Trp Arg Phe Leu Tyr  
 325 330 335  
 Leu Arg Asp Phe Arg Asp Asn Thr Val Arg Val Gln Asp Thr Asp Trp  
 340 345 350  
 Lys Glu Leu Tyr Arg Lys Arg His Ile Gln Arg Lys Glu Ser Pro Lys  
 355 360 365  
 Gly Arg Phe Val Leu Leu Leu Pro Ser Ser Thr His Thr Ile Pro Phe  
 370 375 380  
 Tyr Pro Asn Pro Leu His Pro Arg Pro Phe Pro Ser Ser Arg Leu Pro  
 385 390 395 400  
 Pro Gly Ile Ile Gly Gly Glu Tyr Asp Gln Arg Pro Thr Leu Pro Tyr  
 405 410 415  
 Val Gly Asp Pro Ile Ser Ser Leu Ile Pro Gly Pro Gly Glu Thr Pro  
 420 425 430  
 Ser Gln Leu Pro Pro Leu Arg Pro Arg Phe Asp Pro Val Gly Pro Leu  
 435 440 445  
 Pro Gly Pro Asn Pro Ile Leu Pro Gly Arg Gly Gly Pro Asn Asp Arg  
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 Phe Pro Phe Arg Pro Ser Arg Gly Arg Pro Thr Asp Gly Arg Leu Ser  
 465 470 475 480  
 Phe Met

<210> 15

<211> 43

<212> PRT

<213> Homo sapiens

<220>

<223> F-box motif amino acid residues in the human F-box protein FBP1

<400> 15

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 Leu Asp Ala Lys Ser Leu Cys Ala Ala Glu Leu Val Cys Lys Glu Trp  
 20 25 30  
 Tyr Arg Val Thr Ser Asp Gly Met Leu Trp Lys  
 35 40

<210> 16  
 <211> 40  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> F-box motif amino acid residues in the human F-box protein FBP2

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<210> 17  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> F-box motif amino acid residues in the human F-box protein FBP3

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<210> 18  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> F-box motif amino acid residues in the human F-box protein FBP4

<400> 18  
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 20 25 30  
 Arg Asn Pro Ile Leu Trp Arg  
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<210> 19  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> F-box motif amino acid residues in the human F-box protein FBP5

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 Asp Asp Lys Gly Ala Phe Gln  
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<210> 20  
 <211> 40  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> F-box motif amino acid residues in the human F-box protein FBP6

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                   20                  25                  30  
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<210> 21  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> F-box motif amino acid residues in the human F-box protein FBP7

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                   20                  25                  30  
 Asn Asp Pro Leu Leu Trp Arg  
                   35

<210> 22  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> F-box motif amino acid residues in the human F-box protein SKP2

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 <212> DNA  
 <213> Homo sapiens

<220>

<223> Nucleotide sequence of human F-box protein FBP3b

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<210> 24

<211> 434

<212> PRT

<213> Homo sapiens

<220>

<223> Amino Acid sequence of human F-box protein FBP3b

<400> 24

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 20          25          30
Thr His Thr His Thr Val Leu Leu Asp Trp Gly Ser Leu Pro His His
 35          40          45
Val Val Leu Gln Ile Phe Gln Tyr Leu Pro Leu Leu Asp Arg Ala Cys
 50          55          60
Ala Ser Ser Val Cys Arg Arg Trp Asn Glu Val Phe His Ile Ser Asp
 65          70          75          80
Leu Trp Arg Lys Phe Glu Phe Glu Leu Asn Gln Ser Ala Thr Ser Ser
 85          90          95
Phe Lys Ser Thr His Pro Asp Leu Ile Gln Gln Ile Ile Lys Lys His
100          105          110
Phe Ala His Leu Gln Tyr Val Ser Phe Lys Val Asp Ser Ser Ala Glu
115          120          125
Ser Ala Glu Ala Ala Cys Asp Ile Leu Ser Gln Leu Val Asn Cys Ser
130          135          140
Ile Gln Thr Leu Gly Leu Ile Ser Thr Ala Lys Pro Ser Phe Met Asn
145          150          155          160
Val Ser Glu Ser His Phe Val Ser Ala Leu Thr Val Val Phe Ile Asn
165          170          175
Ser Lys Ser Leu Ser Ser Ile Lys Ile Glu Asp Thr Pro Val Asp Asp
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<210> 26  
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 <212> PRT  
 <213> Homo sapiens

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 <222> 218,556,630  
 <223> Xaa = unknown amino acid residue

<220>  
 <223> Amino Acid sequence of human F-box protein FBP8

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 20          25          30
Val Thr Ser Thr Gly Val Asp Lys Ser Leu Asn Gln Leu Leu His Gly
 35          40          45
Leu Gly Thr Ser Ser Arg Leu Ser His Phe Pro Phe Gly Lys Ser Pro
 50          55          60
Pro Arg Gly Gln Phe Val Ala Ala Ala Val Glu Ile Ala Gly Arg Ser
 65          70          75          80
Gly Leu Gln Met Gly Gln Gly Leu Trp Arg Val Val Arg Asn Gln Gln
 85          90          95
Leu Gln Gln Glu Gly Tyr Ser Glu Gln Gly Tyr Leu Thr Arg Glu Gln
100          105          110
Ser Arg Arg Met Ala Ala Ser Asn Ile Ser Asn Thr Asn His Arg Lys
115          120          125
Gln Val Gln Gly Gly Ile Asp Ile Tyr His Leu Leu Lys Ala Arg Lys
130          135          140
Ser Lys Glu Gln Glu Gly Phe Ile Asn Leu Glu Met Leu Pro Pro Glu
145          150          155          160
Leu Ser Phe Thr Ile Leu Ser Tyr Leu Asn Ala Thr Asp Leu Cys Leu
165          170          175
Ala Ser Cys Val Trp Gln Asp Leu Ala Asn Asp Glu Leu Leu Trp Gln
180          185          190
Gly Leu Cys Lys Ser Thr Trp Gly His Cys Ser Ile Tyr Asn Lys Asn
195          200          205
Pro Pro Leu Gly Phe Ser Phe Arg Lys Xaa Tyr Met Gln Leu Asp Glu
210          215          220
Gly Ser Leu Thr Phe Asn Ala Asn Pro Asp Glu Gly Val Asn Tyr Phe
225          230          235          240
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<210> 28
<211> 621
<212> PRT
<213> Homo sapiens

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<220>
<223> Amino Acid sequence of human F-box protein FBP9

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Leu Pro Gly Glu Val Leu Glu Tyr Ile Leu Cys Cys Gly Ser Leu Thr
      35             40             45
Ala Ala Asp Ile Gly Arg Val Ser Ser Thr Cys Arg Arg Leu Arg Glu
      50             55             60
Leu Cys Gln Ser Ser Gly Lys Val Trp Lys Glu Gln Phe Arg Val Arg
      65             70             75             80
Trp Pro Ser Leu Met Lys His Tyr Ser Pro Thr Asp Tyr Val Asn Trp
      85             90             95
Leu Glu Glu Tyr Lys Val Arg Gln Lys Ala Gly Leu Glu Ala Arg Lys
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Ile Val Ala Ser Phe Ser Lys Arg Phe Phe Ser Glu His Val Pro Cys
      115            120            125
Asn Gly Phe Ser Asp Ile Glu Asn Leu Glu Gly Pro Glu Ile Phe Phe
      130            135            140
Glu Asp Glu Leu Val Cys Ile Leu Asn Met Glu Gly Arg Lys Ala Leu
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Thr Trp Lys Tyr Tyr Ala Lys Lys Ile Leu Tyr Tyr Leu Arg Gln Gln
      165            170            175
Lys Ile Leu Asn Asn Leu Lys Ala Phe Leu Gln Gln Pro Asp Asp Tyr
      180            185            190
Glu Ser Tyr Leu Glu Gly Ala Val Tyr Ile Asp Gln Tyr Cys Asn Pro
      195            200            205
Leu Ser Asp Ile Ser Leu Lys Asp Ile Gln Ala Gln Ile Asp Ser Ile
      210            215            220
Val Glu Leu Val Cys Lys Thr Leu Arg Gly Ile Asn Ser Arg His Pro
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Leu Lys Phe Lys Gly Asn Arg Met Asp Tyr Tyr Asn Ala Leu Asn Leu
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Tyr Met His Gln Val Leu Ile Arg Arg Thr Gly Ile Pro Ile Ser Met
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Ser Leu Leu Tyr Leu Thr Ile Ala Arg Gln Leu Gly Val Pro Leu Glu
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Pro Val Asn Phe Pro Ser His Phe Leu Leu Arg Trp Cys Gln Gly Ala
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Leu	Glu	Ile	Arg	Tyr	Pro	Glu	Asp	Leu	Glu	Phe	Val	Tyr	Glu	Thr	Val		
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<210> 29  
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 <213> Homo sapiens

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 <223> n = a, g, c, or t

<220>  
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 cttatggagg gagtgtgtgc gcagagtatt gcggacccat cggagcgtaa cctggatctc 240  
 cgcaggcctg gcggaggccg gccacctggn ggggcatt 278

<210> 30  
 <211> 91  
 <212> PRT  
 <213> Homo sapiens

<220> .  
 <221> VARIANT  
 <222> 15,22,28,89  
 <223> Xaa = unknown amino acid residue

<220>  
 <223> Amino Acid sequence of human F-box protein FBP10

<400> 30  
 Arg Ser Thr Gly Phe Arg Arg Ala Gly Glu Glu Trp Ser Arg Xaa Leu  
 1 5 10 15  
 Ala Ala Ser Pro Gly Xaa Leu Arg Arg Pro Ala Xaa Thr Phe Val Leu  
 20 25 30  
 Ser Asn Leu Ala Glu Val Val Glu Arg Val Leu Thr Phe Leu Pro Ala  
 35 40 45  
 Lys Ala Leu Leu Arg Val Ala Cys Val Cys Arg Leu Trp Arg Glu Cys  
 50 55 60  
 Val Arg Arg Val Leu Arg Thr His Arg Ser Val Thr Trp Ile Ser Ala  
 65 70 75 80  
 Gly Leu Ala Glu Ala Gly His Leu Xaa Gly His  
 85 90

<210> 31  
 <211> 592  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> Nucleotide sequence of human F-box protein FBP11

<400> 31  
 gcggccgcgc ccggtgcagc aacagcagca gcagcccccg cagcagccgc cgccgcagcc 60  
 gcccagcagc cagccgcccc agcagcagcc tccgcccgcg ccgcagcagc agcagcagca 120  
 gcagcctccg ccgcccgcac cgcgcctcc ggcgctgcct caggagcggc acaacgtcgg 180  
 cgagcgggat gatgatgtgc ctgcagatat gggtgcagaa gaatcaggtc ctggtgcaca 240  
 aaatagtcca taccaacttc gtagaaaaac tcttttgccg aaaagaacag cgtgtcccac 300  
 aaagaacagt atggagggcg cctcaacttc aactacagaa aactttggtc atcgtgcaaa 360  
 acgtgcaaga gtgtctggaa aatcacaaga tctatcagca gcacctgctg aacagtatct 420  
 tcaggagaaa ctgccagatg aagtggttct aaaaatcttc tcttacttgc tggaacagga 480  
 tctttgtaga gcagcttggtg tatgtaaacg cttcagtgaa cttgctaattg atcccaattt 540  
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<210> 32  
 <211> 197  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Amino Acid sequence of human F-box protein FBP11

<400> 32  
 Arg Pro Arg Pro Val Gln Gln Gln Gln Gln Gln Pro Pro Gln Gln Pro  
 1 5 10 15  
 Pro Pro Gln Pro Pro Gln Gln Gln Pro Pro Gln Gln Gln Pro Pro Pro  
 20 25 30  
 Pro Pro Gln Gln Gln Gln Gln Gln Pro Pro Pro Pro Pro Pro Pro  
 35 40 45  
 Pro Pro Pro Leu Pro Gln Glu Arg Asn Asn Val Gly Glu Arg Asp Asp

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      50              55              60
Asp Val Pro Ala Asp Met Val Ala Glu Glu Ser Gly Pro Gly Ala Gln
65
Asn Ser Pro Tyr Gln Leu Arg Arg Lys Thr Leu Leu Pro Lys Arg Thr
80
      85              90              95
Ala Cys Pro Thr Lys Asn Ser Met Glu Gly Ala Ser Thr Ser Thr Thr
100              105              110
Glu Asn Phe Gly His Arg Ala Lys Arg Ala Arg Val Ser Gly Lys Ser
115              120              125
Gln Asp Leu Ser Ala Ala Pro Ala Glu Gln Tyr Leu Gln Glu Lys Leu
130              135              140
Pro Asp Glu Val Val Leu Lys Ile Phe Ser Tyr Leu Leu Glu Gln Asp
145              150              155
Leu Cys Arg Ala Ala Cys Val Cys Lys Arg Phe Ser Glu Leu Ala Asn
165              170              175
Asp Pro Asn Leu Trp Lys Arg Leu Tyr Met Glu Val Phe Glu Tyr Thr
180              185              190
Arg Pro Met Met His
195

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<210> 33  
 <211> 537  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> Nucleotide sequence of human F-box protein FBP12

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<400> 33
gcgggcgcgcg cccggactcc gcggtgggcg agcgccctgt gaggtgacca tggaggetgg 60
tggcctcccc ttggagctgt ggcgcatgat cttagcctac ttgcaccttc ccgacctggg 120
ccgctgcagc ctggtatgca gggcctggta tgaactgata ctcagtctcg acagcaccgc 180
ctggcggcag ctgtgtctgg gttgcaccga gtgccgccat cccaattggc ccaaccagcc 240
agatgtggag cctgagtcct ggagagaagc cttcaagcag cattaccttg catccaagac 300
atggaccaag aatgccttgg acttgagtc ttccatctgc ttttctctat tccgccggag 360
gagggaaacga cgtaccctga gtgttgggcc aggccgtgag tttgacagcc tgggcagtgc 420
cttggccatg gccagcctgt atgaccgaat tgtgctcttc ccaggtgtgt acgaagagca 480
aggtgaaatc atcttgaagg tgcctgtgga gattgtaggg caggggaagt tgggtga 537

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<210> 34  
 <211> 178  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Amino Acid sequence of human F-box protein FBP12

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<400> 34
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Met Glu Ala Gly Gly Leu Pro Leu Glu Leu Trp Arg Met Ile Leu Ala
20      25      30
Tyr Leu His Leu Pro Asp Leu Gly Arg Cys Ser Leu Val Cys Arg Ala
35      40      45
Trp Tyr Glu Leu Ile Leu Ser Leu Asp Ser Thr Arg Trp Arg Gln Leu
50      55      60
Cys Leu Gly Cys Thr Glu Cys Arg His Pro Asn Trp Pro Asn Gln Pro
65      70      75      80
Asp Val Glu Pro Glu Ser Trp Arg Glu Ala Phe Lys Gln His Tyr Leu
85      90      95

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Ala	Ser	Lys	Thr	Trp	Thr	Lys	Asn	Ala	Leu	Asp	Leu	Glu	Ser	Ser	Ile
			100					105					110		
Cys	Phe	Ser	Leu	Phe	Arg	Arg	Arg	Arg	Glu	Arg	Arg	Thr	Leu	Ser	Val
		115					120					125			
Gly	Pro	Gly	Arg	Glu	Phe	Asp	Ser	Leu	Gly	Ser	Ala	Leu	Ala	Met	Ala
	130					135					140				
Ser	Leu	Tyr	Asp	Arg	Ile	Val	Leu	Phe	Pro	Gly	Val	Tyr	Glu	Glu	Gln
145					150					155					160
Gly	Glu	Ile	Ile	Leu	Lys	Val	Pro	Val	Glu	Ile	Val	Gly	Gln	Gly	Lys
				165					170					175	
Leu	Gly														

<210> 35  
 <211> 751  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> Nucleotide sequence of human F-box protein FBP13

<400> 35  
 gagaccgaga cggcgccgct gaccctagag tcgctgcca ccgatcccct gctcctcatc 60  
 ttatcctttt tggactatcg ggatctaata aactgttggt atgtcagtcg aagattaagc 120  
 cagctatcaa gtcgatgcc gctgtggaga agacattgca aaaaatactg gctgatatct 180  
 gaggaagaga aaacacagaa gaatcagtg tggaaatctc tcttcataga tacttactct 240  
 gatgtaggaa gatacattga ccattatgct gctattaaaa aggctcggg aatgatctca 300  
 agaaatatat ggagcccagg tgcctcggga tgggttttat ctctgaaaga ggggtgctcg 360  
 agaggaagac ctcgatgctg tggagcgca gattgggctg caagtttcct ggacgattat 420  
 cgatgttcat accgaattca caatggacag aagttagttg gttcctggg ttattgggaa 480  
 gcatggcact gtctaatacac tatcgttctg aagatttggt agacgtcgat acagctgccg 540  
 gagattccag cagagacagg gactgaaata ctgtctccct ttaacttttg catacatact 600  
 ggtttgagtc agtacatagc agtggaaagt gcagagggtt gaaacaaaaa tgaagttttc 660  
 taccaatgtc agacagtaga acgtgtgttt aaatatggca ttaagatgtg ttctgatggt 720  
 tgtataaatg gcatgcatta ggtattttca g 751

<210> 36  
 <211> 247  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Amino Acid sequence of human F-box protein FBP13

<400> 36  
 Glu Thr Glu Thr Ala Pro Leu Thr Leu Glu Ser Leu Pro Thr Asp Pro  
 1 5 10 15  
 Leu Leu Leu Ile Leu Ser Phe Leu Asp Tyr Arg Asp Leu Ile Asn Cys  
 20 25 30  
 Cys Tyr Val Ser Arg Arg Leu Ser Gln Leu Ser Ser His Asp Pro Leu  
 35 40 45  
 Trp Arg Arg His Cys Lys Lys Tyr Trp Leu Ile Ser Glu Glu Glu Lys  
 50 55 60  
 Thr Gln Lys Asn Gln Cys Trp Lys Ser Leu Phe Ile Asp Thr Tyr Ser  
 65 70 75 80  
 Asp Val Gly Arg Tyr Ile Asp His Tyr Ala Ala Ile Lys Lys Ala Ser  
 85 90 95  
 Gly Met Ile Ser Arg Asn Ile Trp Ser Pro Gly Val Leu Gly Trp Val  
 100 105 110

Leu	Ser	Leu	Lys	Glu	Gly	Cys	Ser	Arg	Gly	Arg	Pro	Arg	Cys	Cys	Gly
		115					120					125			
Ser	Ala	Asp	Trp	Ala	Ala	Ser	Phe	Leu	Asp	Asp	Tyr	Arg	Cys	Ser	Tyr
	130					135					140				
Arg	Ile	His	Asn	Gly	Gln	Lys	Leu	Val	Gly	Ser	Trp	Gly	Tyr	Trp	Glu
145					150					155					160
Ala	Trp	His	Cys	Leu	Ile	Thr	Ile	Val	Leu	Lys	Ile	Cys	Thr	Ser	Ile
				165					170					175	
Gln	Leu	Pro	Glu	Ile	Pro	Ala	Glu	Thr	Gly	Thr	Glu	Ile	Leu	Ser	Pro
			180				185						190		
Phe	Asn	Phe	Cys	Ile	His	Thr	Gly	Leu	Ser	Gln	Tyr	Ile	Ala	Val	Glu
		195					200					205			
Ala	Ala	Glu	Gly	Asn	Lys	Asn	Glu	Val	Phe	Tyr	Gln	Cys	Gln	Thr	Val
	210					215					220				
Glu	Arg	Val	Phe	Lys	Tyr	Gly	Ile	Lys	Met	Cys	Ser	Asp	Gly	Cys	Ile
225					230					235					240
Asn	Gly	Met	His	Val	Phe	Ser									
				245											

<210> 37  
 <211> 368  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> variation  
 <222> 45,329,332  
 <223> n = a, c, g, or t

<220>  
 <223> Nucleotide sequence of human F-box protein FBP14

<400> 37  
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 caggaacctg aggtcggctg ctgcgggaaa tacttcctgt ttggcttcaa cattgtcttc 120  
 tgggtgctgg gagccctgtt cctggctatc ggctctctgg cctgggggtga gaaggcggtt 180  
 ctctcgaaca tctcagcgtt gacagatctg ggaggccttg accccgtgtg gcttggtttgt 240  
 ggtagtgtga ggcgtcatgt cgggtgctggg ctttgctggg ctgcaattgg ggccctccgg 300  
 gagaacacct tcctgctcaa gttttctcnc gngttcctcg gtctcatctt cttcctggag 360  
 ctggcaac 368

<210> 38  
 <211> 122  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> VARIANT  
 <222> 110,111  
 <223> Xaa = unknown amino acid residue

<220>  
 <223> Amino Acid sequence of human F-box protein FBP14

<400> 38  
 Gly Ser Gly Phe Arg Ala Gly Gly Trp Pro Leu Thr Met Pro Gly Lys  
 1 5 10 15  
 His Gln His Phe Gln Glu Pro Glu Val Gly Cys Cys Gly Lys Tyr Phe  
 20 25 30  
 Leu Phe Gly Phe Asn Ile Val Phe Trp Val Leu Gly Ala Leu Phe Leu  
 35 40 45







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aagattggcc ttggttaagat tcacagcacc ttcgctgcc aagtactgggc tcatgaacag 960
gaggtgaact gtgtggattg caaagggggc atcatatcat ttggctccag ggacaggacg 1020
gccaaggtgt ggccttttggc ctcaggccag ctggggcagt gtttatacac catccagact 1080
gaagaccaa tctggtctgt tgctatcagg ccattactca gctcttttgt gacagggacg 1140
gcttggttgt ggcacttctc acccctgaaa atctgggacc tcaacagtgg gcagctgatg 1200
acacacttgg acagagactt tcccccaagg gctgggggtgc tggatgtcat atatgagtcc 1260
ccttttcgac tgctctcctg tggctatgac acctatgttc gctactggga ctgccgcacc 1320
agtgtccgga aatgtgtcat ggagtgggag gagccccaca acagcaccct gtactgcctg 1380
cagacagatg gcaaccactt gcttgccaca ggttcctcct tctatagcgt tgtacggctg 1440
tgggaccggc accaaagggc ctgcccgcac accttcccgc tgacgtcgac ccgcctcggc 1500
agccctgtgt actgcctgca tctcaccacc aagcatctct atgctgcgct gtcttacaac 1560
ctccacgtcc tggatattca aaaccctga 1590

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<210> 44  
 <211> 529  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Amino Acid sequence of human F-box protein FBP17

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<400> 44
Arg Gly Gly Ser Glu Gly Arg Gly Arg Gly Arg Glu Lys Arg Ala Arg
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20     25     30
Asp Gly Glu Gly Gly Ser Gly Pro Gly Ala Glu Ala Gly Ala Arg Thr
35     40     45
Arg Pro Arg Glu Glu Ala Glu Gly Gly Gly Ser Val Glu Glu Gly Ala
50     55     60
Arg Gly Ile Ile Lys Gly Asp Glu Gly Ser Val Gly Ala Gly Lys Glu
65     70     75     80
Ala Gln Gly Arg Lys Tyr Gly Lys Glu Glu Trp Arg Val Arg Ala Arg
85     90     95
Arg Arg Glu Gly Ala Arg Pro Gly Arg Val Gln Gly Gln Gly Gly Gln
100    105    110
Val Trp Ala Tyr Ile Pro Gly Thr Gly Ala Ala Met Ala Ala Ala Ala
115    120    125
Arg Glu Glu Glu Glu Glu Ala Arg Glu Ser Ala Ala Cys Pro Ala
130    135    140
Ala Gly Pro Ala Leu Trp Arg Leu Pro Glu Val Leu Leu Leu His Met
145    150    155    160
Cys Ser Tyr Leu Asp Met Arg Ala Leu Gly Arg Leu Ala Gln Val Tyr
165    170    175
Arg Trp Leu Trp His Phe Thr Asn Cys Asp Leu Leu Arg Arg Gln Ile
180    185    190
Ala Trp Ala Ser Leu Asn Ser Gly Phe Thr Arg Leu Gly Thr Asn Leu
195    200    205
Met Thr Ser Val Pro Val Lys Val Ser Gln Asn Trp Ile Val Gly Cys
210    215    220
Cys Arg Glu Gly Ile Leu Lys Trp Arg Cys Ser Gln Met Pro Trp
225    230    235    240
Met Gln Leu Glu Asp Asp Ala Leu Tyr Ile Ser Gln Ala Asn Phe Ile
245    250    255
Leu Ala Tyr Gln Phe Arg Pro Asp Gly Ala Ser Leu Asn Arg Gln Pro
260    265    270
Leu Gly Val Ser Ala Gly His Asp Glu Asp Val Cys His Phe Val Leu
275    280    285
Ala Thr Ser His Ile Val Ser Ala Gly Gly Asp Gly Lys Ile Gly Leu
290    295    300

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Gly Lys Ile His Ser Thr Phe Ala Ala Lys Tyr Trp Ala His Glu Gln  
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 Glu Val Asn Cys Val Asp Cys Lys Gly Gly Ile Ile Ser Phe Gly Ser  
 325 330 335  
 Arg Asp Arg Thr Ala Lys Val Trp Pro Leu Ala Ser Gly Gln Leu Gly  
 340 345 350  
 Gln Cys Leu Tyr Thr Ile Gln Thr Glu Asp Gln Ile Trp Ser Val Ala  
 355 360 365  
 Ile Arg Pro Leu Leu Ser Ser Phe Val Thr Gly Thr Ala Cys Cys Gly  
 370 375 380  
 His Phe Ser Pro Leu Lys Ile Trp Asp Leu Asn Ser Gly Gln Leu Met  
 385 390 395 400  
 Thr His Leu Asp Arg Asp Phe Pro Pro Arg Ala Gly Val Leu Asp Val  
 405 410 415  
 Ile Tyr Glu Ser Pro Phe Ala Leu Leu Ser Cys Gly Tyr Asp Thr Tyr  
 420 425 430  
 Val Arg Tyr Trp Asp Cys Arg Thr Ser Val Arg Lys Cys Val Met Glu  
 435 440 445  
 Trp Glu Glu Pro His Asn Ser Thr Leu Tyr Cys Leu Gln Thr Asp Gly  
 450 455 460  
 Asn His Leu Leu Ala Thr Gly Ser Ser Phe Tyr Ser Val Val Arg Leu  
 465 470 475 480  
 Trp Asp Arg His Gln Arg Ala Cys Pro His Thr Phe Pro Leu Thr Ser  
 485 490 495  
 Thr Arg Leu Gly Ser Pro Val Tyr Cys Leu His Leu Thr Thr Lys His  
 500 505 510  
 Leu Tyr Ala Ala Leu Ser Tyr Asn Leu His Val Leu Asp Ile Gln Asn  
 515 520 525  
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<210> 45  
 <211> 1214  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> Nucleotide sequence of human F-box protein FBP18

<400> 45  
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 tctttttggc taattgacta attttaactt ctgtgttgct tttccagagg catggctatt 180  
 gcaccttggg agaagccttt aatcggttag acttctcaag tgcaattcaa gatatccgaa 240  
 cgttcaatta tgttgtcaaa ctgttgacgc taattgcaaa atcccagtta acttcattga 300  
 gtggcgtggc acagaagaat tacttcaaca ttttggataa aatcgttcaa aagggttcttg 360  
 atgaccacca caatcctcgc ttaatcaaaag atcttctgca agacctaaagc tctaccctct 420  
 gcattcttat tagaggagta gggaagtctg tattagtggg aaacatcaat atttggattt 480  
 gccgattaga aactattctc gcctggcaac aacagctaca ggatcttcag atgactaagc 540  
 aagtgaacaa tggcctcacc ctcaagtacc ttctctgca catgctgaac aacatcctat 600  
 accggttctc agacggatgg gacatcatca ccttaggccca ggtgaccccc acgttgtata 660  
 tgcttagtga agacagacag ctgtggaaga agctttgtca gtaccatttt gctgaaaagc 720  
 agttttgtag acatttgatc ctttcagaaa aaggctatat tgaatggaag ttgatgtact 780  
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 ggcaactgcag cattctcttt tgggaaggact caggacaccc ctgcacggcg gccgaccctg 900  
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 aactgccctt ctgcaaaggg gggactgcat ggttgcat tcatcactga aagtcagagg 1140  
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ttgcgtactc tctc

1214

<210> 46  
<211> 272  
<212> PRT  
<213> Homo sapiens

<220>

<223> Amino Acid sequence of human F-box protein FBP18

<400> 46

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 20           25           30
Ile Arg Thr Phe Asn Tyr Val Val Lys Leu Leu Gln Leu Ile Ala Lys
 35           40           45
Ser Gln Leu Thr Ser Leu Ser Gly Val Ala Gln Lys Asn Tyr Phe Asn
 50           55           60
Ile Leu Asp Lys Ile Val Gln Lys Val Leu Asp Asp His His Asn Pro
 65           70           75           80
Arg Leu Ile Lys Asp Leu Leu Gln Asp Leu Ser Ser Thr Leu Cys Ile
 85           90           95
Leu Ile Arg Gly Val Gly Lys Ser Val Leu Val Gly Asn Ile Asn Ile
100           105           110
Trp Ile Cys Arg Leu Glu Thr Ile Leu Ala Trp Gln Gln Gln Leu Gln
115           120           125
Asp Leu Gln Met Thr Lys Gln Val Asn Asn Gly Leu Thr Leu Ser Asp
130           135           140
Leu Pro Leu His Met Leu Asn Asn Ile Leu Tyr Arg Phe Ser Asp Gly
145           150           155           160
Trp Asp Ile Ile Thr Leu Gly Gln Val Thr Pro Thr Leu Tyr Met Leu
165           170           175
Ser Glu Asp Arg Gln Leu Trp Lys Lys Leu Cys Gln Tyr His Phe Ala
180           185           190
Glu Lys Gln Phe Cys Arg His Leu Ile Leu Ser Glu Lys Gly His Ile
195           200           205
Glu Trp Lys Leu Met Tyr Phe Ala Leu Gln Lys His Tyr Pro Ala Lys
210           215           220
Glu Gln Tyr Gly Asp Thr Leu His Phe Cys Arg His Cys Ser Ile Leu
225           230           235           240
Phe Trp Lys Asp Ser Gly His Pro Cys Thr Ala Ala Asp Pro Asp Ser
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<210> 47  
<211> 4059  
<212> DNA  
<213> Homo sapiens

<220>

<223> Nucleotide sequence of human F-box protein FBP19

<400> 47

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tgcgcacact gagcacgccc agcccagccc tgatatgtcc accgaatctc ccaggatttc 180
agaatggaag gggctcgtcc acctcctcgt cctccatcac cggggagacg gtggccatgg 240
tgcactcccc gcccccgacc cgctcacac acccgctcat ccggctcgcc tccagacccc 300
agaaggagca ggccagcata gaccggctcc cggaccactc catggtgcag atcttctcct 360
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tgcataggca	aaatactttt	caggcctttt	taaaaaattc	attacagcaa	acagctgggg	2040
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4059

<210> 48  
 <211> 483  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Amino Acid sequence of human F-box protein FBP19

<400> 48  
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 35 40 45  
 Ala Leu Ile Cys Pro Pro Asn Leu Pro Gly Phe Gln Asn Gly Arg Gly  
 50 55 60  
 Ser Ser Thr Ser Ser Ser Ser Ile Thr Gly Glu Thr Val Ala Met Val  
 65 70 75 80  
 His Ser Pro Pro Pro Thr Arg Leu Thr His Pro Leu Ile Arg Leu Ala  
 85 90 95  
 Ser Arg Pro Gln Lys Glu Gln Ala Ser Ile Asp Arg Leu Pro Asp His  
 100 105 110  
 Ser Met Val Gln Ile Phe Ser Phe Leu Pro Thr Asn Gln Leu Cys Arg  
 115 120 125  
 Cys Ala Arg Val Cys Arg Arg Trp Tyr Asn Leu Ala Trp Asp Pro Arg  
 130 135 140  
 Leu Trp Arg Thr Ile Arg Leu Thr Gly Glu Thr Ile Asn Val Asp Arg  
 145 150 155 160  
 Ala Leu Lys Val Leu Thr Arg Arg Leu Cys Gln Asp Thr Pro Asn Val  
 165 170 175  
 Cys Leu Met Leu Glu Thr Val Thr Val Ser Gly Cys Arg Arg Leu Thr  
 180 185 190  
 Asp Arg Gly Leu Tyr Thr Ile Ala Gln Cys Cys Pro Glu Leu Arg Arg  
 195 200 205  
 Leu Glu Val Ser Gly Cys Tyr Asn Ile Ser Asn Glu Ala Val Phe Asp  
 210 215 220  
 Val Val Ser Leu Cys Pro Asn Leu Glu His Leu Asp Val Ser Gly Cys  
 225 230 235 240  
 Ser Lys Val Thr Cys Ile Ser Leu Thr Arg Glu Ala Ser Ile Lys Leu  
 245 250 255  
 Ser Pro Leu His Gly Lys Gln Ile Ser Ile Arg Tyr Leu Asp Met Thr  
 260 265 270  
 Asp Cys Phe Val Leu Glu Asp Glu Gly Leu His Thr Ile Ala Ala His  
 275 280 285  
 Cys Thr Gln Leu Thr His Leu Tyr Leu Arg Arg Cys Val Arg Leu Thr  
 290 295 300  
 Asp Glu Gly Leu Arg Tyr Leu Val Ile Tyr Cys Ala Ser Ile Lys Glu  
 305 310 315 320  
 Leu Ser Val Ser Asp Cys Arg Phe Val Ser Asp Phe Gly Leu Arg Glu  
 325 330 335  
 Ile Ala Lys Leu Glu Ser Arg Leu Arg Tyr Leu Ser Ile Ala His Cys  
 340 345 350  
 Gly Arg Val Thr Asp Val Gly Ile Arg Tyr Val Ala Lys Tyr Cys Ser  
 355 360 365  
 Lys Leu Arg Tyr Leu Asn Ala Arg Gly Cys Glu Gly Ile Thr Asp His  
 370 375 380  
 Gly Val Glu Tyr Leu Ala Lys Asn Cys Thr Lys Leu Lys Ser Leu Asp

385		390		395		400
Ile Gly Lys Cys Pro	Leu Val Ser Asp Thr Gly Leu Glu Cys Leu Ala					
	405		410			415
Leu Asn Cys Phe Asn Leu Lys Arg Leu Ser Leu Lys Ser Cys Glu Ser						
	420		425			430
Ile Thr Gly Gln Gly Leu Gln Ile Val Ala Ala Asn Cys Phe Asp Leu						
	435		440			445
Gln Thr Leu Asn Val Gln Asp Cys Glu Val Ser Val Glu Ala Leu Arg						
	450		455			460
Phe Val Lys Arg His Cys Lys Arg Cys Val Ile Glu His Thr Asn Pro						
465	470		475			480
Ala Phe Phe						

<210> 49  
 <211> 850  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> Nucleotide sequence of human F-box protein FBP20

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 ggcggacggc cccatgccct tctgggcag ggtggcgcgc gtgtgccgcc gctggcagga 180  
 ggccgcttcc caaccgcgc tctggcacac cgtgaccctg tcgtccccgc tggtcggccg 240  
 gcctgccaag ggcgggtca aggcggagaa gaagctcctt gcttccctgg agtggcttat 300  
 gcccaatcgg ttttcacagc tccagaggct gaccctcatc cactggaagt ctcaggtaca 360  
 ccccggtgtg aagctggtag gtgagtgtg tctcggctc actttectca agctctccgg 420  
 ctgccacggt gtgactgctg acgctctggt catgctagcc aaagcctgct gccagctcca 480  
 tagcctggac ctacagcact ccatggtgga gtccacagct gtggtgagct tcttggagga 540  
 ggcaggggtcc cgaatgcgca agttgtggct gacctacagc tcccagacga cagccatcct 600  
 gggcgcatcg ctgggcagct gctgccccca gctccaggct ctggaggtga gcaccggcat 660  
 caaccgtaat agcattcccc ttcagctgcc tgtcgaggct ctgcagaaag gctgccctca 720  
 gctccaggtg ctgcggctgt tgaacctgat gtggctgccc aagcctccgg gacgaggggt 780  
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 ctttgtgagc 850

<210> 50  
 <211> 283  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Amino Acid sequence of human F-box protein FBP20

<400> 50  
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 Gly Pro Asp Ala Gly Trp Gly Asp Arg Ile Pro Leu Glu Ile Leu Val  
 20 25 30  
 Gln Ile Phe Gly Leu Leu Val Ala Ala Asp Gly Pro Met Pro Phe Leu  
 35 40 45  
 Gly Arg Ala Ala Arg Val Cys Arg Arg Trp Gln Glu Ala Ala Ser Gln  
 50 55 60  
 Pro Ala Leu Trp His Thr Val Thr Leu Ser Ser Pro Leu Val Gly Arg  
 65 70 75 80  
 Pro Ala Lys Gly Gly Val Lys Ala Glu Lys Lys Leu Leu Ala Ser Leu  
 85 90 95

Glu	Trp	Leu	Met	Pro	Asn	Arg	Phe	Ser	Gln	Leu	Gln	Arg	Leu	Thr	Leu
			100					105					110		
Ile	His	Trp	Lys	Ser	Gln	Val	His	Pro	Val	Leu	Lys	Leu	Val	Gly	Glu
			115				120						125		
Cys	Cys	Pro	Arg	Leu	Thr	Phe	Leu	Lys	Leu	Ser	Gly	Cys	His	Gly	Val
		130				135					140				
Thr	Ala	Asp	Ala	Leu	Val	Met	Leu	Ala	Lys	Ala	Cys	Cys	Gln	Leu	His
145					150					155					160
Ser	Leu	Asp	Leu	Gln	His	Ser	Met	Val	Glu	Ser	Thr	Ala	Val	Val	Ser
			165						170					175	
Phe	Leu	Glu	Glu	Ala	Gly	Ser	Arg	Met	Arg	Lys	Leu	Trp	Leu	Thr	Tyr
			180					185					190		
Ser	Ser	Gln	Thr	Thr	Ala	Ile	Leu	Gly	Ala	Leu	Leu	Gly	Ser	Cys	Cys
		195				200						205			
Pro	Gln	Leu	Gln	Val	Leu	Glu	Val	Ser	Thr	Gly	Ile	Asn	Arg	Asn	Ser
		210				215					220				
Ile	Pro	Leu	Gln	Leu	Pro	Val	Glu	Ala	Leu	Gln	Lys	Gly	Cys	Pro	Gln
225					230					235					240
Leu	Gln	Val	Leu	Arg	Leu	Leu	Asn	Leu	Met	Trp	Leu	Pro	Lys	Pro	Pro
			245					250						255	
Gly	Arg	Gly	Val	Ala	Pro	Gly	Pro	Gly	Phe	Pro	Ser	Leu	Glu	Glu	Leu
			260					265					270		
Cys	Leu	Ala	Ser	Ser	Thr	Cys	Asn	Phe	Val	Ser					
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<210> 51  
 <211> 1777  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> variation  
 <222> 1733  
 <223> n = a, c, g, or t

<220>  
 <223> Nucleotide sequence of human F-box protein FBP21

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 tgctgaagag cgacagaart tttttaaata ttccgtggat gaaaagtcag ataaagaagc 120  
 agaagtgtca gaacactcca caggtataac ccatcttcct cctgaggtaa tgctgtcaat 180  
 tttcagctat cttaatcctc aagagttatg tcgatgcagt caagtaagca tgaaatggtc 240  
 tcagctgaca aaaacgggat cgctttggaa acatctttac cctgttcatt gggccagagg 300  
 tgactgggat agtgggtccc caactgaact tgatactgaa cctgatgatg aatgggtgaa 360  
 aaataggaaa gatgaaagtc gtgcttttca tgagtgggat gaagatgctg acattgatga 420  
 atctgaagag tctgcggagg aatcaattgc tatcagcatt gcacaaatgg aaaaacgttt 480  
 actccatggc ttaattcata acgtttctacc atatgttggg acttctgtaa aaaccttagt 540  
 attagcatac agctctgcag tttccagcaa aatggttagg cagatttttag agctttgtcc 600  
 taacctggag catctggatc ttaccagac tgacatttca gattctgcat ttgacagttg 660  
 gtcttggtct ggttgctgcc agagtcttcg gcatcttgat ctgtctgggt gtgagaaaat 720  
 cacagatgtg gccctagaga agatttccag agctcttgga attctgacat ctcatcaaag 780  
 tggctttttt aaaacatcta caagcaaaat tacttcaact gcgtggaaaa ataaagacat 840  
 taccatgcag tccaccaagc agtatgcctg tttgcacgat ttaactaaca agggcatttg 900  
 agaagaaata gataatgaac acccctggac taagcctggt tcttctgaga atttcacttc 960  
 tccttatgtg tggatgttag atgctgaaga tttggctgat attgaagata ctgtggaatg 1020  
 gagacataga aatgttgaaa gtctttgtgt aatggaaaca gcatccaact ttagttgttc 1080  
 cacctctggg tgttttagta aggacattgt tggactaagg actagtgtct gttggcagca 1140  
 gcattgtgct tctccagcct ttgcgtattg ttgtcactca ttttgttgta caggaacagc 1200  
 ttaagaact atgtcatcac tcccagaatc ttctgcaatg ttagaaaaag cagcaaggac 1260

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tagattgcct aggggaaaag acttaattta ctttgggagt gaaaaatctg atcaagagac 1320
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tgatctttgt ctacttcatt tagctgagca ggctttcttt catgcacttt actcatagca 1680
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cttcagaaat cttaattacc agtgrattgt aatgttg 1777

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<210> 52  
 <211> 590  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> VARIANT  
 <222> 576,586  
 <223> Xaa = unknown amino acid residue

<220>  
 <223> Amino Acid sequence of human F-box protein FBP21

<400> 52

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Asp	Glu	Lys	Ser	Asp	Lys	Glu	Ala	Glu	Val	Ser	Glu	His	Ser	Thr	Gly	35	40	45	
Ile	Thr	His	Leu	Pro	Pro	Glu	Val	Met	Leu	Ser	Ile	Phe	Ser	Tyr	Leu	50	55	60	
Asn	Pro	Gln	Glu	Leu	Cys	Arg	Cys	Ser	Gln	Val	Ser	Met	Lys	Trp	Ser	65	70	75	80
Gln	Leu	Thr	Lys	Thr	Gly	Ser	Leu	Trp	Lys	His	Leu	Tyr	Pro	Val	His	85	90	95	
Trp	Ala	Arg	Gly	Asp	Trp	Tyr	Ser	Gly	Pro	Ala	Thr	Glu	Leu	Asp	Thr	100	105	110	
Glu	Pro	Asp	Asp	Glu	Trp	Val	Lys	Asn	Arg	Lys	Asp	Glu	Ser	Arg	Ala	115	120	125	
Phe	His	Glu	Trp	Asp	Glu	Asp	Ala	Asp	Ile	Asp	Glu	Ser	Glu	Glu	Ser	130	135	140	
Ala	Glu	Glu	Ser	Ile	Ala	Ile	Ser	Ile	Ala	Gln	Met	Glu	Lys	Arg	Leu	145	150	155	160
Leu	His	Gly	Leu	Ile	His	Asn	Val	Leu	Pro	Tyr	Val	Gly	Thr	Ser	Val	165	170	175	
Lys	Thr	Leu	Val	Leu	Ala	Tyr	Ser	Ser	Ala	Val	Ser	Ser	Lys	Met	Val	180	185	190	
Arg	Gln	Ile	Leu	Glu	Leu	Cys	Pro	Asn	Leu	Glu	His	Leu	Asp	Leu	Thr	195	200	205	
Gln	Thr	Asp	Ile	Ser	Asp	Ser	Ala	Phe	Asp	Ser	Trp	Ser	Trp	Leu	Gly	210	215	220	
Cys	Cys	Gln	Ser	Leu	Arg	His	Leu	Asp	Leu	Ser	Gly	Cys	Glu	Lys	Ile	225	230	235	240
Thr	Asp	Val	Ala	Leu	Glu	Lys	Ile	Ser	Arg	Ala	Leu	Gly	Ile	Leu	Thr	245	250	255	
Ser	His	Gln	Ser	Gly	Phe	Leu	Lys	Thr	Ser	Thr	Ser	Lys	Ile	Thr	Ser	260	265	270	
Thr	Ala	Trp	Lys	Asn	Lys	Asp	Ile	Thr	Met	Gln	Ser	Thr	Lys	Gln	Tyr	275	280	285	
Ala	Cys	Leu	His	Asp	Leu	Thr	Asn	Lys	Gly	Ile	Gly	Glu	Glu	Ile	Asp				

290		295		300
Asn Glu His Pro Trp Thr Lys Pro Val Ser Ser Glu Asn Phe Thr Ser				
305		310		315
Pro Tyr Val Trp Met Leu Asp Ala Glu Asp Leu Ala Asp Ile Glu Asp				320
	325		330	
Thr Val Glu Trp Arg His Arg Asn Val Glu Ser Leu Cys Val Met Glu				335
	340		345	
Thr Ala Ser Asn Phe Ser Cys Ser Thr Ser Gly Cys Phe Ser Lys Asp				350
	355		360	
Ile Val Gly Leu Arg Thr Ser Val Cys Trp Gln Gln His Cys Ala Ser				365
	370		375	
Pro Ala Phe Ala Tyr Cys Gly His Ser Phe Cys Cys Thr Gly Thr Ala				380
385		390		395
Leu Arg Thr Met Ser Ser Leu Pro Glu Ser Ser Ala Met Cys Arg Lys				400
	405		410	
Ala Ala Arg Thr Arg Leu Pro Arg Gly Lys Asp Leu Ile Tyr Phe Gly				415
	420		425	
Ser Glu Lys Ser Asp Gln Glu Thr Gly Arg Val Leu Leu Phe Leu Ser				430
	435		440	
Leu Ser Gly Cys Tyr Gln Ile Thr Asp His Gly Leu Arg Val Leu Thr				445
	450		455	
Leu Gly Gly Gly Leu Pro Tyr Leu Glu His Leu Asn Leu Ser Gly Cys				460
465		470		475
Leu Thr Ile Thr Gly Ala Gly Leu Gln Asp Leu Val Ser Ala Cys Pro				480
	485		490	
Ser Leu Asn Asp Glu Tyr Phe Tyr Tyr Cys Asp Asn Ile Asn Gly Pro				495
	500		505	
His Ala Asp Thr Ala Ser Gly Cys Gln Asn Leu Gln Cys Gly Phe Arg				510
	515		520	
Ala Cys Cys Arg Ser Gly Glu Pro Leu Thr Ser Asp Leu Cys Leu Leu				525
	530		535	
His Leu Ala Glu Gln Ala Phe Phe His Ala Leu Tyr Ser His Ile Ser				540
545		550		555
Cys Val Asn His Pro Phe Leu Ser Val Thr Cys Phe Gly Pro Ile Xaa				560
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Tyr Asn Phe Arg Asn Leu Asn Tyr Gln Xaa Ile Val Met Leu				575
	580		585	
				590

<210> 53

<211> 1681

<212> DNA

<213> Homo sapiens

<220>

<221> variation

<222> 348

<223> n = a, g, c, or t

<220>

<223> Nucleotide sequence of human F-box protein FBP22

<400> 53

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gagggcaaaa ggagcactag ctaggtcaga gccatgtttc aggtcacaaat gtgatgtcag 180
atgttgctta taaatccttt cttgtcttcg ccattcttaa atcttgatag gtgcctgttg 240
ggaaactgta aatgcctttc ccaatggaga atcaacagat tgggtgatgg tggagtcggt 300
caggaagact caggtcttct agaggaaagg atgcctcatc accccttngg cccaggcagc 360
tgctgtcaga gaatgacaca gcacctgcac agtcgctgtc cacttcctgc cactgctgtc 420
ggtggggtga cgaggagcaa gtaggcgtgg actttgacat gagggagctg agcccgcac 480

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cgcttgatgc ctgcacgggt aacctgctgg cagtcgtaca gctcgaggcg ctccaggcct 540
cggcagttct ctaggtgtyc cagggccaca tcagtgatga ggaggcagtt gtccaactcc 600
agtacccgca gcctctcatg gccacaggta ctggttgctca ggtgcaggat cccatcatct 660
gkgatgagtt cacagtggga caggctcagg gcttgacagt taggacagtg aatggagagc 720
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<210> 54  
 <211> 549  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> VARIANT  
 <222> 150,309,340, 374  
 <223> Xaa = unknown amino acid residue

<220>  
 <223> Amino Acid sequence of human F-box protein FBP22

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<400> 54
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Leu Leu Leu Arg Ile Phe Ser Phe Leu Asp Ile Val Thr Leu Cys Arg
35          40          45
Cys Ala Gln Ile Ser Lys Ala Trp Asn Ile Leu Ala Leu Asp Gly Ser
50          55          60
Asn Trp Gln Arg Ile Asp Leu Phe Asn Phe Gln Ile Asp Val Glu Gly
65          70          75          80
Arg Val Val Glu Asn Ile Ser Lys Arg Cys Val Gly Phe Leu Arg Lys
85          90          95
Leu Ser Leu Arg Gly Cys Ile Gly Val Gly Asp Ser Ser Leu Lys Thr
100          105          110
Phe Ala Gln Asn Cys Arg Asn Ile Glu His Leu Asn Leu Asn Gly Cys
115          120          125
Thr Lys Ile Thr Asp Ser Thr Cys Tyr Ser Leu Ser Arg Phe Cys Ser
130          135          140
Lys Leu Lys His Leu Xaa Leu Thr Ser Cys Val Ser Ile Thr Asn Ser
145          150          155          160
Ser Leu Lys Gly Ile Ser Phe Gly Cys Arg Asn Leu Glu Tyr Leu Asn
165          170          175
Leu Ser Trp Cys Asp Gln Ile Thr Lys Asp Gly Ile Glu Ala Leu Val
180          185          190

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Arg Gly Cys Arg Gly Leu Lys Ala Leu Leu Leu Arg Gly Cys Thr Gln  
 195 200 205  
 Leu Glu Asp Glu Ala Leu Lys His Ile Gln Asn Tyr Cys His Glu Leu  
 210 215 220  
 Val Ser Leu Asn Leu Gln Ser Cys Ser Arg Ile Thr Asp Glu Gly Val  
 225 230 235 240  
 Val Gln Ile Cys Arg Gly Cys His Arg Leu Gln Ala Leu Cys Leu Ser  
 245 250 255  
 Gly Cys Ser Asn Leu Thr Asp Ala Ser Leu Thr Ala Leu Gly Leu Asn  
 260 265 270  
 Cys Pro Arg Leu Gln Ile Leu Glu Ala Ala Arg Cys Ser His Leu Thr  
 275 280 285  
 Asp Ala Gly Phe Thr Leu Leu Ala Arg Asn Cys His Glu Leu Glu Lys  
 290 295 300  
 Met Asp Leu Glu Xaa Cys Ile Leu Ile Thr Asp Ser Thr Leu Ile Gln  
 305 310 315 320  
 Leu Ser Ile His Cys Pro Lys Leu Gln Ala Leu Ser Leu Ser His Cys  
 325 330 335  
 Glu Leu Ile Xaa Asp Asp Gly Ile Leu His Leu Ser Asn Ser Thr Cys  
 340 345 350  
 Gly His Glu Arg Leu Arg Val Leu Glu Leu Asp Asn Cys Leu Leu Ile  
 355 360 365  
 Thr Asp Val Ala Leu Xaa His Leu Glu Asn Cys Arg Gly Leu Glu Arg  
 370 375 380  
 Leu Glu Leu Tyr Asp Cys Gln Gln Val Thr Arg Ala Gly Ile Lys Arg  
 385 390 395 400  
 Met Arg Ala Gln Leu Pro His Val Lys Val His Ala Tyr Phe Ala Pro  
 405 410 415  
 Val Thr Pro Pro Thr Ala Val Ala Gly Ser Gly Gln Arg Leu Cys Arg  
 420 425 430  
 Cys Cys Val Ile Leu Gln Gln Leu Pro Gly Pro Lys Gly Gly Ile Leu  
 435 440 445  
 Ser Ser Arg Arg Pro Glu Ser Ser Pro Thr Pro Pro Ser Pro Asn Leu  
 450 455 460  
 Leu Ile Leu His Trp Glu Arg His Leu Gln Phe Pro Asn Arg His Leu  
 465 470 475 480  
 Ser Arg Phe Lys Asn Gly Glu Asp Lys Lys Gly Phe Ile Ser Asn Ile  
 485 490 495  
 His His Ile Val Thr Asn Met Ala Leu Thr Leu Val Leu Leu Pro  
 500 505 510  
 Ser Ser Leu Met Ser Ser Leu Thr Ser Thr His Leu Leu Leu Tyr Leu  
 515 520 525  
 Arg Leu Ile Ile Leu Lys Thr Asp Gln Thr Gly Pro Ala Ser Lys Tyr  
 530 535 540  
 Ile Asn Cys Val Gln  
 545

<210> 55

<211> 1866

<212> DNA

<213> Homo sapiens

<220>

<223> Nucleotide sequence of human F-box protein FBP23

<400> 55

atgtcaccgg tctttcccat gttaacagtt ctgaccatgt tttattatat atgccttcgg 60  
 cgccgagcca ggacagctac aagaggagaa atgatgaaca cccatagagc tatagaatca 120  
 aacagccaga cttccctct caatgcagag gtagtccagt atgcaaaga agtagtgat 180  
 ttcagttccc attatggaag tgagaatagt atgtcctata ctatgtggaa tttggctggt 240



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gtaccaaattg tattcccaag ttctggtgac ttactcaga cagctgtgtt tcgaacttat 300
gggacatgggt gggatcagtg tcctagtgtc tccttgccat tcaagaggac gccacctaatt 360
tttcagagccc aggactatgt ggaacttact tttgaacaac aggtgtatcc tacagctgta 420
catgtttctag aaacctatca tcccggagca gtcattagaa ttctcgcttg ttctgcaaat 480
ccttattccc caaatccacc agctgaagta agatgggaga ttctttgggtc agagagacct 540
acgaaggtga atgcttccca agctcgccag tttaaacctt gtattaagca gataaatttc 600
cccacaaatc ttatacgact ggaagtaaat agttctcttc tggaatatta cactgaatta 660
gatgcagttg tgctacatgg tgtgaaggac aagccagtg cttctctcaa gacttcactt 720
attgacatga atgatataga agatgatgcc tatgcagaaa aggatgggtg tggaatggac 780
agtcttaaca aaaagttag cagtgtgtgc ctcggggaag ggccaaataa tgggtatttt 840
gataaactac cttatgagct tattcagctg attctgaatc atcttacct accagacctg 900
tgtagattag cacagacttg caaactactg agccagcatt gctgtgatcc tctgcaatac 960
atccacctca atctgcaacc atactgggca aaactagatg acacttctct ggaatttcta 1020
cagtctcgct gcaactcttg ccagtggtt aatttatctt ggactggcaa tagaggcttc 1080
atctctgttg caggatttag caggtttctg aaggtttgtg gatccgaatt agtacgcctt 1140
gaattgtctt gcagccactt tcttaatgaa acttgcttag aagttatttc tgagatgtgt 1200
ccaaatctac aggccttaaa tctctcctcc tgtgataagc taccacctca agctttcaac 1260
cacattgcca agttatgcag ccttaaacga cttgttctct atcgaacaaa agtagagcaa 1320
acagcactgc tcagcatttt gaacttctgt tcagagcttc agcacctcag tttaggcagt 1380
tgtgtcatga ttgaagacta tgatgtgata gctagcatga taggagccaa gtgtaaaaaa 1440
ctccggaccc tggatctgtg gagatgtaag aatattactg agaatggaat agcagaactg 1500
gcttctgggt gtccactact ggaggagctt gaccttggct ggtgcccaac tctgcagagc 1560
agcacccgggt gcttcaccag actggcacac cagctcccaa acttgcaaaa actctttctt 1620
acagctaata gatctgtgtg tgacacagac attgatgaat tggcatgtaa ttgtaccagg 1680
ttacagcagc tggacatatt aggaacaaga atggtgaagt cggcatcctt aagaaaactt 1740
ctggaatctt gtaaagatct ttctttactt gatgtgtcct tctgttcgca gattgataac 1800
agagctgtgc tagaactgaa tgcaagcttt ccaaaagtgt tcataaaaaa gagctttact 1860
cagtga

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<210> 56

<211> 621

<212> PRT

<213> Homo sapiens

<220>

<223> Amino Acid sequence of human F-box protein FBP23

<400> 56

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Met Ser Pro Val Phe Pro Met Leu Thr Val Leu Thr Met Phe Tyr Tyr
1          5          10          15
Ile Cys Leu Arg Arg Arg Ala Arg Thr Ala Thr Arg Gly Glu Met Met
20          25          30
Asn Thr His Arg Ala Ile Glu Ser Asn Ser Gln Thr Ser Pro Leu Asn
35          40          45
Ala Glu Val Val Gln Tyr Ala Lys Glu Val Val Asp Phe Ser Ser His
50          55          60
Tyr Gly Ser Glu Asn Ser Met Ser Tyr Thr Met Trp Asn Leu Ala Gly
65          70          75          80
Val Pro Asn Val Phe Pro Ser Ser Gly Asp Phe Thr Gln Thr Ala Val
85          90          95
Phe Arg Thr Tyr Gly Thr Trp Trp Asp Gln Cys Pro Ser Ala Ser Leu
100         105         110
Pro Phe Lys Arg Thr Pro Pro Asn Phe Gln Ser Gln Asp Tyr Val Glu
115         120         125
Leu Thr Phe Glu Gln Gln Val Tyr Pro Thr Ala Val His Val Leu Glu
130         135         140
Thr Tyr His Pro Gly Ala Val Ile Arg Ile Leu Ala Cys Ser Ala Asn
145         150         155         160
Pro Tyr Ser Pro Asn Pro Pro Ala Glu Val Arg Trp Glu Ile Leu Trp
165         170         175
Ser Glu Arg Pro Thr Lys Val Asn Ala Ser Gln Ala Arg Gln Phe Lys

```



<220>

<223> Nucleotide sequence of human F-box protein FBP24

<400> 57

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atgcaacttg tacctgatat agagttcaag attacttata cccggtctcc agatgggtgat 60
ggcgttggaa acagctacat tgaagataat gatgatgaca gcaaaatggc agatctcttg 120
tcctacttcc agcagcaact cacatttcag gagtctgtgc ttaaactgtg tcagcctgag 180
cttgagagca gtcagattca catatcagtg ctgccaatgg aggtcctgat gtacatcttc 240
cgatgggtgg tgtctagtga cttggacctc agatcattgg agcagttgtc gctggtgtgc 300
agaggattct acatctgtgc cagagaccct gaaatatggc gtctggcctg cttgaaagtt 360
tggggcagaa gctgtattaa acttgttccg tacacgtcct ggagagagat gtttttagaa 420
cggcctcgtg ttcggtttga tggcgtgtat atcagtaaaa ccacatatat tcgtcaaggg 480
gaacagtctc ttgatggttt ctatagagcc tggcaccaag tggaatatta caggtacata 540
agattctttc ctgatggcca tgtgatgatg ttgacaaccc ctgaagagcc tcagtccatt 600
gttccacgtt taagaactag gaataccagg actgatgcaa ttctactggg tcactatcgc 660
ttgtcacaag acacagacaa tcagaccaaa gtatttgctg taataactaa gaaaaagaa 720
gaaaaaccac ttgactataa atacagatat tttcgtcgtg tccctgtaca agaagcagat 780
cagagttttc atgtggggct acagctatgt tccagtggtc accagaggtt caacaaactc 840
atctggatac atcattcttg tcacattact tacaatcaa ctggtgagac tgcagtcagt 900
gcttttgaga ttgacaagat gtacaccccc ttgttcttcg ccagagtaag gagctacaca 960
gctttctcag aaaggcctct gtag 984
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<210> 58

<211> 327

<212> PRT

<213> Homo sapiens

<220>

<223> Amino Acid sequence of human F-box protein FBP24

<400> 58

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Met Gln Leu Val Pro Asp Ile Glu Phe Lys Ile Thr Tyr Thr Arg Ser
1          5          10          15
Pro Asp Gly Asp Gly Val Gly Asn Ser Tyr Ile Glu Asp Asn Asp Asp
20          25          30
Asp Ser Lys Met Ala Asp Leu Leu Ser Tyr Phe Gln Gln Gln Leu Thr
35          40          45
Phe Gln Glu Ser Val Leu Lys Leu Cys Gln Pro Glu Leu Glu Ser Ser
50          55          60
Gln Ile His Ile Ser Val Leu Pro Met Glu Val Leu Met Tyr Ile Phe
65          70          75          80
Arg Trp Val Val Ser Ser Asp Leu Asp Leu Arg Ser Leu Glu Gln Leu
85          90          95
Ser Leu Val Cys Arg Gly Phe Tyr Ile Cys Ala Arg Asp Pro Glu Ile
100          105          110
Trp Arg Leu Ala Cys Leu Lys Val Trp Gly Arg Ser Cys Ile Lys Leu
115          120          125
Val Pro Tyr Thr Ser Trp Arg Glu Met Phe Leu Glu Arg Pro Arg Val
130          135          140
Arg Phe Asp Gly Val Tyr Ile Ser Lys Thr Thr Tyr Ile Arg Gln Gly
145          150          155          160
Glu Gln Ser Leu Asp Gly Phe Tyr Arg Ala Trp His Gln Val Glu Tyr
165          170          175
Tyr Arg Tyr Ile Arg Phe Phe Pro Asp Gly His Val Met Met Leu Thr
180          185          190
Thr Pro Glu Glu Pro Gln Ser Ile Val Pro Arg Leu Arg Thr Arg Asn
195          200          205
Thr Arg Thr Asp Ala Ile Leu Leu Gly His Tyr Arg Leu Ser Gln Asp
210          215          220
```

Thr Asp Asn Gln Thr Lys Val Phe Ala Val Ile Thr Lys Lys Lys Glu  
 225 230 235 240  
 Glu Lys Pro Leu Asp Tyr Lys Tyr Arg Tyr Phe Arg Arg Val Pro Val  
 245 250 255  
 Gln Glu Ala Asp Gln Ser Phe His Val Gly Leu Gln Leu Cys Ser Ser  
 260 265 270  
 Gly His Gln Arg Phe Asn Lys Leu Ile Trp Ile His His Ser Cys His  
 275 280 285  
 Ile Thr Tyr Lys Ser Thr Gly Glu Thr Ala Val Ser Ala Phe Glu Ile  
 290 295 300  
 Asp Lys Met Tyr Thr Pro Leu Phe Phe Ala Arg Val Arg Ser Tyr Thr  
 305 310 315 320  
 Ala Phe Ser Glu Arg Pro Leu  
 325

<210> 59  
 <211> 765  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> variation  
 <222> 471  
 <223> n = a, c, g, or t

<220>  
 <223> Nucleotide sequence of human F-box protein FBP25

<400> 59  
 gcagccctgg atcctgactt agagaatgat gatttctttg tcagaaagac tggggcctttc 60  
 catgcaaatc catatgttct ccgagctttt gaagacttta gaaagtcttc tgagcaagat 120  
 gattctgtag agcgagatat aattttacag tgtagagaag gtgaacttgt acttccggat 180  
 ttggaaaaag atgatatgat tgttcgccga atcccagcac agaagaaaga agtgccgctg 240  
 tctggggccc cagatagata ccaccagtc ctttttcccg aaccctggac tcttctcca 300  
 gaaattcaag caaaatttct ctgtgtactt gaaaggacat gcccatccaa agaaaaaagt 360  
 aatagctgta gaatattagt tccttcatat cggcagaaga aagatgacat gctgacacgt 420  
 aagattcagt cctggaaact gggaactacc gtgcctccca tcagtttcac ncctggcccc 480  
 tgcagtgagg ctgacttgaa gagatgggag gccatccggg aggccagcag actcaggcac 540  
 aagaaaaggc tgatggtgga gagactcttt caaaagattt atggtgagaa tgggagtaag 600  
 tccatgagtg atgtcagcgc agaagatggt caaaacttgc gtcagctgcg ttacgaggag 660  
 atgcagaaaa taaaatcaca attaaaagaa caagatcaga aatggcagga tgaccttgca 720  
 aatggaaaag atcgtcgaaa aagttacact tcagatctgc agaag 765

<210> 60  
 <211> 255  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Amino Acid sequence of human F-box protein FBP25

<400> 60  
 Ala Ala Leu Asp Pro Asp Leu Glu Asn Asp Asp Phe Phe Val Arg Lys  
 1 5 10 15  
 Thr Gly Ala Phe His Ala Asn Pro Tyr Val Leu Arg Ala Phe Glu Asp  
 20 25 30  
 Phe Arg Lys Phe Ser Glu Gln Asp Asp Ser Val Glu Arg Asp Ile Ile  
 35 40 45  
 Leu Gln Cys Arg Glu Gly Glu Leu Val Leu Pro Asp Leu Glu Lys Asp  
 50 55 60

Asp Met Ile Val Arg Arg Ile Pro Ala Gln Lys Lys Glu Val Pro Leu  
 65 70 75 80  
 Ser Gly Ala Pro Asp Arg Tyr His Pro Val Pro Phe Pro Glu Pro Trp  
 85 90 95  
 Thr Leu Pro Pro Glu Ile Gln Ala Lys Phe Leu Cys Val Leu Glu Arg  
 100 105 110  
 Thr Cys Pro Ser Lys Glu Lys Ser Asn Ser Cys Arg Ile Leu Val Pro  
 115 120 125  
 Ser Tyr Arg Gln Lys Lys Asp Asp Met Leu Thr Arg Lys Ile Gln Ser  
 130 135 140  
 Trp Lys Leu Gly Thr Thr Val Pro Pro Ile Ser Phe Thr Pro Gly Pro  
 145 150 155 160  
 Cys Ser Glu Ala Asp Leu Lys Arg Trp Glu Ala Ile Arg Glu Ala Ser  
 165 170 175  
 Arg Leu Arg His Lys Lys Arg Leu Met Val Glu Arg Leu Phe Gln Lys  
 180 185 190  
 Ile Tyr Gly Glu Asn Gly Ser Lys Ser Met Ser Asp Val Ser Ala Glu  
 195 200 205  
 Asp Val Gln Asn Leu Arg Gln Leu Arg Tyr Glu Glu Met Gln Lys Ile  
 210 215 220  
 Lys Ser Gln Leu Lys Glu Gln Asp Gln Lys Trp Gln Asp Asp Leu Ala  
 225 230 235 240  
 Lys Trp Lys Asp Arg Arg Lys Ser Tyr Thr Ser Asp Leu Gln Lys  
 245 250 255

<210> 61  
 <211> 36  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Conserved F-box motif amino acid residues in the human F-box protein  
 FBP8

<400> 61  
 Leu Pro Pro Glu Leu Ser Phe Thr Ile Leu Ser Tyr Leu Asn Ala Thr  
 1 5 10 15  
 Asp Leu Cys Leu Ala Ser Cys Val Trp Gln Asp Leu Ala Asn Asp Glu  
 20 25 30  
 Leu Leu Trp Gln  
 35

<210> 62  
 <211> 42  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Conserved F-box motif amino acid residues in the human F-box protein  
 FBP9

<400> 62  
 Leu Pro Gly Glu Val Leu Glu Tyr Ile Leu Cys Cys Gly Ser Leu Thr  
 1 5 10 15  
 Ala Ala Asp Ile Gly Arg Val Ser Ser Thr Cys Arg Arg Leu Arg Glu  
 20 25 30  
 Leu Cys Gln Ser Ser Gly Lys Val Trp Lys  
 35 40

<210> 63  
 <211> 44  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Conserved F-box motif amino acid residues in the human F-box protein  
 FBP10

<400> 63  
 Leu Ala Glu Val Val Glu Arg Val Leu Thr Phe Leu Pro Ala Lys Ala  
 1 5 10 15  
 Leu Leu Arg Val Ala Cys Val Cys Arg Leu Trp Arg Glu Cys Val Arg  
 20 25 30  
 Arg Val Leu Arg Thr His Arg Ser Val Thr Trp Ile  
 35 40

<210> 64  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Conserved F-box motif amino acid residues in the human F-box protein  
 FBP11

<400> 64  
 Leu Pro Asp Glu Val Val Leu Lys Ile Phe Ser Tyr Leu Leu Glu Gln  
 1 5 10 15  
 Asp Leu Cys Arg Ala Ala Cys Val Cys Lys Arg Phe Ser Glu Leu Ala  
 20 25 30  
 Asn Asp Pro Asn Leu Trp Lys  
 35

<210> 65  
 <211> 41  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Conserved F-box motif amino acid residues in the human F-box protein  
 FBP12

<400> 65  
 Leu Pro Leu Glu Leu Trp Arg Met Ile Leu Ala Tyr Leu His Leu Pro  
 1 5 10 15  
 Asp Leu Gly Arg Cys Ser Leu Val Cys Arg Ala Trp Tyr Glu Leu Ile  
 20 25 30  
 Leu Ser Leu Asp Ser Thr Arg Trp Arg  
 35 40

<210> 66  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<220>

<223> Conserved F-box motif amino acid residues in the human F-box protein  
FBP14

<400> 66

```
Leu Pro Thr Asp Pro Leu Leu Leu Ile Leu Ser Phe Leu Asp Tyr Arg
 1           5           10           15
Asp Leu Ile Asn Cys Cys Tyr Val Ser Arg Arg Leu Ser Gln Leu Ser
          20           25           30
Ser His Asp Pro Leu Trp Arg
          35
```

<210> 67

<211> 40

<212> PRT

<213> Homo sapiens

<220>

<223> Conserved F-box motif amino acid residues in the human F-box protein  
FBP16

<400> 67

```
Leu Pro Glu Pro Leu Leu Leu Arg Val Leu Ala Ala Leu Pro Ala Ala
 1           5           10           15
Glu Leu Val Gln Ala Cys Arg Leu Val Cys Leu Arg Trp Lys Glu Leu
          20           25           30
Val Asp Gly Ala Pro Leu Trp Leu
          35           40
```

<210> 68

<211> 40

<212> PRT

<213> Homo sapiens

<220>

<223> Conserved F-box motif amino acid residues in the human F-box protein  
FBP16

<400> 68

```
Leu Phe Pro Pro Glu Leu Val Glu His Ile Ile Ser Phe Leu Pro Val
 1           5           10           15
Arg Asp Leu Val Ala Leu Gly Gln Thr Cys Arg Tyr Phe His Glu Val
          20           25           30
Cys Asp Gly Glu Gly Val Trp Arg
          35           40
```

<210> 69

<211> 44

<212> PRT

<213> Homo sapiens

<220>

<223> Conserved F-box motif amino acid residues in the human F-box protein  
FBP17

<400> 69

```
Leu Pro Glu Val Leu Leu Leu His Met Cys Ser Tyr Leu Asp Met Arg
```

```

1           5           10           15
Ala Leu Gly Arg Leu Ala Gln Val Tyr Arg Trp Leu Trp His Phe Thr
                20                25                30
Asn Cys Asp Leu Leu Arg Arg Gln Ile Ala Trp Ala
            35                40

```

```

<210> 70
<211> 40
<212> PRT
<213> Homo sapiens

```

```

<220>
<223> Conserved F-box motif amino acid residues in the human F-box protein
FBP18

```

```

<400> 70
Leu Pro Leu His Met Leu Asn Asn Ile Leu Tyr Arg Phe Ser Asp Gly
1           5           10           15
Trp Asp Ile Ile Thr Leu Gly Gln Val Thr Pro Thr Leu Tyr Met Leu
                20                25                30
Ser Glu Asp Arg Gln Leu Trp Lys
            35                40

```

```

<210> 71
<211> 39
<212> PRT
<213> Homo sapiens

```

```

<220>
<223> Conserved F-box motif amino acid residues in the human F-box protein
FBP19

```

```

<400> 71
Leu Pro Asp His Ser Met Val Gln Ile Phe Ser Phe Leu Pro Thr Asn
1           5           10           15
Gln Leu Cys Arg Cys Ala Arg Val Cys Arg Arg Trp Tyr Asn Leu Ala
                20                25                30
Trp Asp Pro Arg Leu Trp Arg
            35

```

```

<210> 72
<211> 44
<212> PRT
<213> Homo sapiens

```

```

<220>
<223> Conserved F-box motif amino acid residues in the human F-box protein
FBP20

```

```

<400> 72
Ile Pro Leu Glu Ile Leu Val Gln Ile Phe Gly Leu Leu Val Ala Ala
1           5           10           15
Asp Gly Pro Met Pro Phe Leu Gly Arg Ala Ala Arg Val Cys Arg Arg
                20                25                30
Trp Gln Glu Ala Ala Ser Gln Pro Ala Leu Trp His
            35                40

```



<210> 73  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Conserved F-box motif amino acid residues in the human F-box protein  
 FBP21

<400> 73  
 Leu Pro Pro Glu Val Met Leu Ser Ile Phe Ser Tyr Leu Asn Pro Gln  
 1 5 10 15  
 Glu Leu Cys Arg Cys Ser Gln Val Ser Met Lys Trp Ser Gln Leu Thr  
 20 25 30  
 Lys Thr Gly Ser Leu Trp Lys  
 35

<210> 74  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Conserved F-box motif amino acid residues in the human F-box protein  
 FBP22

<400> 74  
 Leu Pro Lys Glu Leu Leu Leu Arg Ile Phe Ser Phe Leu Asp Ile Val  
 1 5 10 15  
 Thr Leu Cys Arg Cys Ala Gln Ile Ser Lys Ala Trp Asn Ile Leu Ala  
 20 25 30  
 Leu Asp Gly Ser Asn Trp Gln  
 35

<210> 75  
 <211> 48  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Conserved F-box motif amino acid residues in the human F-box protein  
 FBP23

<400> 75  
 Leu Pro Tyr Glu Leu Ile Gln Leu Ile Leu Asn His Leu Thr Leu Pro  
 1 5 10 15  
 Asp Leu Cys Arg Leu Ala Gln Thr Cys Lys Leu Leu Ser Gln His Cys  
 20 25 30  
 Cys Asp Pro Leu Gln Tyr Ile His Leu Asn Leu Gln Pro Tyr Trp Ala  
 35 40 45

<210> 76  
 <211> 44

<212> PRT  
<213> Homo sapiens

<220>  
<223> Conserved F-box motif amino acid residues in the human F-box protein  
FBP24

<400> 76  
Leu Pro Met Glu Val Leu Met Tyr Ile Phe Arg Trp Val Val Ser Ser  
1 5 10 15  
Asp Leu Asp Leu Arg Ser Leu Glu Gln Leu Ser Leu Val Cys Arg Gly  
20 25 30  
Phe Tyr Ile Cys Ala Arg Asp Pro Glu Ile Trp Arg  
35 40

<210> 77  
<211> 49  
<212> PRT  
<213> Homo sapiens

<220>  
<223> Conserved F-box motif amino acid residues in the human F-box protein  
FBP25

<400> 77  
Leu Pro Pro Glu Ile Gln Ala Lys Phe Leu Cys Val Leu Glu Arg Thr  
1 5 10 15  
Cys Pro Ser Lys Glu Lys Ser Asn Ser Cys Arg Ile Leu Val Pro Ser  
20 25 30  
Tyr Arg Gln Lys Lys Asp Asp Met Leu Thr Arg Lys Ile Gln Ser Trp  
35 40 45  
Lys

<210> 78  
<211> 39  
<212> PRT  
<213> Homo sapiens

<220>  
<223> Conserved F-box motif amino acid residues in the human F-box protein  
FBP3b

<400> 78  
Leu Pro His His Val Val Leu Gln Ile Phe Gln Tyr Leu Pro Leu Leu  
1 5 10 15  
Asp Arg Ala Cys Ala Ser Ser Val Cys Arg Arg Trp Asn Glu Val Phe  
20 25 30  
His Ile Ser Asp Leu Trp Arg  
35

<210> 79  
<211> 43  
<212> PRT  
<213> Homo sapiens

<220>  
<223> Conserved F-box motif amino acid residues in the human F-box protein  
FBP13

<400> 79  
Leu Trp Ala Trp Gly Glu Lys Gly Val Leu Ser Asn Ile Ser Ala Leu  
1 5 10 15  
Thr Asp Leu Gly Gly Leu Asp Pro Val Trp Leu Val Cys Gly Ser Trp  
20 25 30  
Arg Arg His Val Gly Ala Gly Leu Cys Trp Ala  
35 40

<210> 80  
<211> 59  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Oligonucleotide

<400> 80  
agtagtaaca aaggtcaaag acagttgact gtatcgtcga ggatgccttc aattaagtt 59

<210> 81  
<211> 58  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Purified primer from Gene Link, Inc.

<400> 81  
gcggttactt acttagagct cgacgtctta cttacttagc tcacttctct tcacacca 58

<210> 82  
<211> 12  
<212> PRT  
<213> Homo sapiens

<220>  
<223> Carboxy-terminus of human Cull

<400> 82  
Cys Asp Gly Glu Lys Asp Thr Tyr Ser Tyr Leu Ala  
1 5 10

<210> 83  
<211> 25  
<212> PRT  
<213> Homo sapiens

<220>  
<223> Peptide located 87 amino acids from  
carboxy-terminus of human Cul2

<400> 83  
Cys Glu Ser Ser Phe Ser Leu Asn Met Asn Phe Ser Ser Lys Arg Thr

1                      5                      10                      15  
 Lys Phe Lys Ile Thr Thr Ser Met Gln  
                     20                      25

<210> 84  
 <211> 12  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Carboxy-terminus of human Skp1

<400> 84  
 Cys Glu Glu Ala Gln Val Arg Lys Glu Asn Gln Trp  
   1                      5                      10

<210> 85  
 <211> 19  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> phospho-peptide with phosphothreonine at position 187

<400> 85  
 Asn Ala Gly Ser Val Glu Gln Thr Pro Lys Lys Pro Gly Leu Arg Arg  
   1                      5                      10                      15  
 Arg Gln Thr

<210> 86  
 <211> 17  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense direction of human Skp2 cDNA  
                     nucleotides 180-196

<400> 86  
 cctgggggat gttctca 17

<210> 87  
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<220>  
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<400> 87  
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<210> 88  
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 <223> Antisense direction of human Skp2 cDNA nucleotides  
 1137-1153

<400> 88  
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<210> 89  
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<220>  
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<400> 89  
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<210> 90  
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<400> 90  
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 1 5 10 15  
 Pro His Ser

<210> 91  
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 <212> DNA  
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<220>  
 <223> D3 primer used to desgin mutant Fbpl allelele

<400> 91  
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<210> 92  
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 <212> DNA  
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<220>  
 <223> Fbpl wild-type D1 primer

<400> 92  
 tcctgaccat cctctcgatg agc 23

<210> 93  
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 <212> DNA  
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<220>  
 <223> neoR gene L90 primer

<400> 93

tctaattcca tcagaagctg act

23

<210> 94  
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<212> PRT  
<213> Fbp1 binding domain

<400> 94  
Asp Ser Gly Ser  
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<210> 95  
<211> 12  
<212> PRT  
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<220>  
<223> Ikappa Beta alpha substrate of Beta-Trcp1/Fbp1

<400> 95  
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1 5 10

<210> 96  
<211> 12  
<212> PRT  
<213> Homo sapiens

<220>  
<223> Beta-catenin substrate of Beta-Trcp1/Fbp1

<400> 96  
Ser Tyr Leu Asp Ser Gly Ile His Ser Gly Ala Thr  
1 5 10

<210> 97  
<211> 12  
<212> PRT  
<213> Homo Sapiens

<220>  
<223> Emil substrate of Beta-Trcp1/Fbp1

<400> 97  
Leu Tyr Glu Asp Ser Gly Tyr Ser Ser Phe Ser Leu  
1 5 10

<210> 98  
<211> 12  
<212> PRT  
<213> Mus musculus

<220>  
<223> Emil substrate of Beta-Trcp1/Fbp1

<400> 98

Leu Tyr Glu Asp Ser Gly Tyr Ser Ser Phe Thr Gln  
1 5 10

<210> 99  
<211> 12  
<212> PRT  
<213> *Xenopus laevis*

<220>  
<223> Emil substrate of Beta-Trcp1/Fbp1

<400> 99  
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1 5 10

<210> 100  
<211> 12  
<212> PRT  
<213> *Drosophila Melanogaster*

<220>  
<223> Emil substrate of Beta-Trcp1/Fbp1

<400> 100  
Ser Leu Met Asp Ser Gly Asn Ser Ser Ile His Leu  
1 5 10